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INAME: PHILLIPS, Cecil James

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IPLACE: NSA, FANX3, Ft. Meade, MD

IVIEWER: PETERSON; JOHNSON, Thomas; BAKER, Charles

[Tape 1, Side 1]

Baker: The is NSA Oral History number 23-93. Mr. Cecil Phillips. Cecil what? Cecil J.

Phillips: James.

Baker: James. Cecil James. We're in the CCH Conference Room in Fanx III. Today's date is July '93. Top Secret Codeword classification unless otherwise indicated at the end of the tape. We'll go a bit over your background. What brought you to NSA?

Phillips: Yes. I had finished my second year at the University of North Carolina and I had been turned down for the draft. I was classified 4F and I went home and my mother said, "Go to work or go back to school," because the University of North Carolina goes on a year-round basis. I had been taking Chemistry and I was not very happy with that. I went to the U.S. Employment Office on the expectation that, with a couple of years of college chemistry, somebody would have some use for me. They didn't but the lady said, "There's a Lieutenant over in the corner recruiting for people to go to Washington. Why don't you go and talk to him?" I walked over and introduced myself and he said, "How would you like to go to Washington and be a Cryptographer?" I said, "I think that would be a great idea." He said, "You know what that means?" and I said, "Sure. I've been interested in it, kind of, from a Little Orphan Annie decoder ring to the Gold Bug to just puzzles in general." So he actually hired me. He gave a test of some sort. I don't know what it was. He said, which I think was partly B.S., "That it was the best score that anybody had made on the test."

Baker: A little bit of the national sell. [Laughs]

TRNOTE: Mr. Phillips frequently joins sentences with "and" and uses "I guess, I mean, I think, so forth", "you know" and "in fact". These additives will be edited unless necessary to preserve accuracy of statements

Phillips: Yeah. I don't have any idea... [Joins in laughing] Don't have any idea. It was one of those matching tests. it was something like an IQ test, I guess. He actually hired me on the spot and gave me a reporting date which was about the 15th of June and I reported on the 22nd day of June (in)

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Washington already hired... That was a Lieutenant (C% Espedol). I've forgotten what his first name was. He apparently had the authority to hire at that point. [redacted] and I talked to the [redacted] who had done this about a year earlier

Baker: Was that [redacted]

Phillips: Yeah. He had a Civil Service office person with him who made the actual hiring. The office of... [redacted] couldn't make the hiring but apparently they changed that. I came to Washington and within the... The crypt school was really mostly... They gave you some manuals and stuff and said, "Why don't you do these crypt problems?" They were really cryptographic problems. That was the cryptographic part, not the cryptanalytic part.

Peterson: Were these the books that we have for military cryptology?

Phillips: No. not. There was a simple paper book that had a whole series of examples that you went through in which you enciphered things. You didn't actually attempt to solve anything. You learned what a PLAYFAIR was and what this kind of substitution was and that kind of substitution and so forth.

Peterson: You learned how to encrypt a message for transmission.

Phillips: How to encrypt a message. Yes

Baker: Playing more at cryptography than cryptanalysis.

Phillips: Yeah. Yeah.

Johnson: Well where was this?

Phillips: At Arlington Hall.

Johnson: At Arlington.

Phillips: In Arlington Hall. Yeah. In fact, the rooms were in the Headquarters Building although when I arrived on the 22nd of June 1943, both A and B Buildings were finished and occupied. The school was in the Headquarters Building. In fact, all the uncleared activity was in the Headquarters Building even though you used a badge to get in the compound. We wore a round, pin-on badge and you used that to get down to the Headquarters Building but the activity in the Headquarters Building was all unclassified. There were no guards on that building and no fence on that building.

Johnson: What was the badge made out of?

Phillips: It was typical of those that you see stamped. That you can buy in a dime store and so forth. It had a plastic cover over a metal base and had a little square picture about an inch and a quarter by an inch and the whole badge was about two inches across.

Baker: Somebody actually came up with one last year.

Phillips: Yeah, somebody. I think Dave Gaddy. Somebody had given Gaddy one but it wasn't the third one. The third badge was red.

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Baker: Oh, really? The opposite from today.

Phillips: Yeah. The most obvious thing, curious thing about it was that Colonel [redacted] who was the Chief of B Group would go around and take them off peoples' coats because you left them on your coat on the rack. Then you had to go to [redacted] and explain why you'd done that. It didn't ever happen to me.

Baker: That same kind of guy used to go around policing up rocks in the area.[Laughs].

Johnson: The original one was red?

Phillips: Yeah. That was for cleared. There were some multicolored ones for the people in some of the... may have been compartments. The people in what they called F Branch which I think may have been running the... .

Baker: That's sort of a logic there. You have a red cover sheet for secret documents.

Phillips: Yeah. In fact, for years, the secure phone at Arlington Hall was a red phone. There was not a tan phone and...

Baker: Or gray.

Johnson: I had uncovered what date we adopted the green badge, which I've forgotten but have written down somewhere, but I never knew what the color was before that.

Phillips: Yeah. I don't remember when we went to hang-around-the-neck badges as opposed to the pin. It must have been...

Baker: '58, '59 or so.

Phillips: No. I think it was probably before that but I can't remember. I just don't remember at all. At any rate, I went... As far as I remember, all they gave people like me... Now I was hired as a CAF-2 which was the bottom of the heap because they made no distinction between people with two years of college and those without any college.

Baker: CAF is what?

Phillips: CAF was called for Clerical, Administrative and Fiscal. The people with... There were a number of girls there that I'd known before who had gone through teachers colleges and a lot of them got (CAF)-3s. People from better colleges got 4s, I think. There were guys who carded SP-5s which was a Sub-Professional and it was equivalent to GS-4. As far as I know, they didn't offer any real cryptanalysis courses at all. Now there may have been a some people who stayed a long time who eventually got into those. I was cleared in about 10 days. The neighbors had told my mother that they had inquiries about me but I don't, to this day, don't know whether those were phone inquiries or was it somebody come to the house or not.

Johnson: Were those telephones (B% answered?).

Phillips: Just barely, as a matter of fact. It wasn't... .It probably wasn't a telephone query... In fact, before I even got cleared, they sent me to work in the Payroll Office as a temp and I stayed there about four or five days and they were as happy to see me go as I was to leave. There was a sheet. A card. A large card for everybody who was employed and it had all the paydays down a column like a spreadsheet and all the various categories across the top. Every payday there was a white slip of paper. A handwritten slip of paper which had to be posted to that. I would sit and do that. I would do them backwards and I'd do them up the columns. Anything to try to relieve the boredom. Of course, I made errors. They rechecked everyone of them by somebody reading them back to another person to check them. That was the way the payroll was done. In those days, we were paid twice a month, not every two weeks. Withholding had just begun.

Baker: Payday was on the first and 15th or something like that.

Phillips: Yeah, it was roughly that. In fact it was the biggest mess that you've ever seen because they couldn't decide, at certain holidays, and so forth... ..

Baker: Which way to go?

Phillips: Which way to go. They had other problems. I believe, to this day, I couldn't confirm this. It was my understanding that, if you took leave on the 31st of the month, that they couldn't charge you because that wasn't figured into the... At any rate we did get... Everybody got 26 days of annual leave from that time on so I never had less that 26 days annual leave.

Johnson: Where did live then?

Phillips: I rented a small room in Arlington Forest. They had a Housing Office which gave me a list of places that there were people who wanted to rent rooms to single people. Interestingly, most of the people wanted to rent to men, not to women. I went out to Arlington Forest which was mile away and rented a tiny room with a little tiny window. It was in a wooded area so it was a little cooler but no air conditioning. I walked every day for about a year from there to Arlington Hall and back and, many a night, walked back to Buckingham for dinner at the local restaurant.

Baker: You didn't have a car?

Phillips: It didn't bother me that much. I was young and skinny. I was 18 and weighed about 140 lbs. About 50 lbs. less than I do now. I was... I talked to an Army...

Johnson: You had two years of college and you were only 18?

Phillips: Two years. Yeah. I graduated at 16. North Carolina had 11 years of schooling when I went through and I skipped a grade so... .

Johnson: Oh, okay.

Phillips: I was talking to an Army Captain who was the placement officer and I kept

bedeviling him to get placed. To get cleared and to get placed. At some point he came and said, "I've got an assignment for you and he took me to the Weather Section which was... [redacted] was writing about, as a matter of fact. I went to work for a guy named [redacted] who was an Air Force. Later, an Air Force but at that time an Army 1st Lieutenant. He had a section of about 50 or 60 people who were working both, German weather and Japanese weather. He sat me down and ... Characteristically, he treated people pretty well. He sat me down and gave me lots of manuals to read and spent time with me and so forth. I'd been there a day or two and the Captain who had assigned me there came around and said, "I made a mistake. We want you to go to, I think, to F Branch." that was a mechanic... I think that may have been where they were working on bombs and things of that sort but I still don't know. I said, "No. I like it here." I stayed there and, fairly soon, was assigned to work for a Lieutenant [redacted] who was a 2nd Lieutenant. Fortunately he had just graduated from CCNY with some sort of teaching degree. He wanted to teach in the worst way. He'd also been through the full course of cryptology at(Fort) Monmouth and he was very bright. He would gather us together. I guess I was the only male and there were about a half a dozen gals who were anywhere from 19 to 22 or 23. Every afternoon he spent an hour or so teaching us cryptanalysis. A kind of special treatment that you wouldn't get very often. In spite of all of that, I have to refer back to the fact that I started... My first introduction was stamping dates on traffic because the traffic came on continuous rolls and the operator didn't enter the date or the station or anything else except one time at the top of the roll.

Peterson: So you had to determine when the 24 hour time came and change the date?

Phillips: Yeah and we'd go down through this and stamp it at 6-inch intervals so that, no matter how you cut it, you had the date. Because it was weather, the date was crucial. In those days, we weren't concerned about the intercept stations but certainly about the date. I graduated from that to stapling and... [laughs] I worked on the problem called the JN-37 which was the Japanese Weather System and it's part of what [redacted] writing about. I don't know why we worked on it, exactly, because it would have been impossible to solve. We had a few depths but I think it would have been totally impossible to solve. I worked on it for eight months. We captured everything in the Far East. Code books, tables, keys. Everything there was. It was a key book of a thousand pages with nine hundred groups on a page. So 900,000 four-digit groups you would have to... and they changed it every three months. It was far more secure than their Army... It was a Broadcast System so I guess... .

Peterson: It was easy to intercept it.

Phillips: It was easy to intercept. Yeah. Theoretically, you would have had enough depth at the end of the period to solve it but the weather codes being what

they were, it would have been virtually impossible. I worked on that until this capture. In the meantime, the Russian problem had moved in the back of the Wing where it was. This was a Wing at Arlington Hall. The Weather Section occupied the whole front half of a Wing which was about twice as large as the back half. The Russian problem, which had about 40 people, had moved into the back half of the building. We didn't know what they were doing. Some people had guessed and some people were... .

Baker: So the Russian problems were about 40 people. What about your other problems?

Phillips: I think it was about 50 or 60 but it was fading fast because the German problem, the German weather problem, GCHQ was handling and it really wasn't practical for us to do. This capture, what I neglected to say was, once the capture was made, it was a Naval Broadcast, is what it was, and it wasn't appropriate for us all to work it. The other thing is that we didn't have the resources to work it. The Navy produced, to my understanding, a hundred Waves. (B% I think [redacted] was one. [redacted] and those hundred gals, under the supervision of a guy named Fred Sims who was a Lieutenant Commander at the time. I don't know if you knew Fred or not? They decrypted the Weather as currently as they possibly could for the remainder of that period. I lost track of it after that.

Baker: Working on the Nebraska Ave.?

Phillips: Working on Nebraska Avenue. Working three shifts and seven days a week.

Peterson: What was the time frame when you had 40 people working the Russian problem? Was it early '44?

Phillips: I'd say early '44 because I came... ..

Peterson: It was after eight months... .

Phillips: I came on the problem the 1st day of May 1944. the Russian problem. One of the things I knew that I neglected to tell you is that, as a GS-2 it was interesting... It seemed to me like everybody was getting promoted and I wasn't. I thought that I had been sort of cheated in the hiring being hired as a (GS) -2 but... Particularly, there were girls I knew in the keypunch section who were getting promoted because they had a scale so that (when) they reached a certain level of proficiency, they got promoted. I hadn't been promoted so [redacted] came around to me in November of '43 and said, "I'm putting you in for promotion." I said to him, something fairly uncharacteristic for me, "If it isn't a double promotion, I'm going to quit and go back to school," and he put me in for a double promotion. I was promoted from a two to a four. I had struck up an acquaintance with a number of people in the Weather Section including [redacted] who was the chief of the section. Some of the people went back there to work on the Russian problem before I did and they said, "It was a

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good place to work." and so forth...

Baker: How old was it?

Phillips: It started... They tried to start it on the 1st day of February 1943. In fact, this was all documented in the work that [redacted] and I had been doing... It ran for a short period of time with a lieutenant and a gal.

Peterson: Just two people?

Phillips: With two people. Then they shut it down and was told by [redacted] that the reason they shut it down was that [redacted] had become too friendly with the British Liaison Officer and so they, publicly, shut it down. Of course they reopened it in a few weeks.

Peterson: Just to get rid of him because of... .?

Phillips: Apparently but we...

Peterson: You don't know...

Phillips: ... haven't established it. We just can't establish it. [redacted] talked to [redacted] who is alive and well and [redacted] but [redacted] was kind of open the first time we called him and then when we called him back, he clammed up.

Baker: Is it spelled the same as the fishing reels? [redacted]

Phillips: No. [redacted] Anyhow, it was started and closed down and then it was reopened with [redacted] an international lawyer from New York City. [redacted]

Baker: How do you spell that?

Phillips: [redacted]

Peterson: The name sounds French.

Phillips: Yes. I think they were. [redacted] was a multi-lingual. He was put in charge of the section and we don't exactly when it was revived but we're guessing, say, April because by May of '43 it was revived. He ran the section for about six months and it had gotten to about eight or ten people. Then they had their first success. When they did, there was some confusion in the story that I was told, and again, we can't confirm. It was told to us by [redacted] that Frank Lewis was there when the success occurred. We tried to track this back and it doesn't look like... it looks like Frank was there and he made some contributions but he wasn't responsible for the initial success. The story goes that he went and told Kullback and then Kullback sees Rowlett in the latrine and mentions it. Rowlett goes ballistic and Frank Lewis was forbidden ever to set foot again... and he didn't until after World War II. Until after the German problems... The Japanese problems were all gone. We never laid eyes on

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Frank Lewis until the Fall of '45.

Peterson: What was he guilty of?

Phillips: Guilty of going to Kullback and reporting that he had a success without reporting it directly to Rowlett.

Baker: What were their relative positions then?

Phillips: Rowlett was chief of what included the Russian Section and Kullback had the Japanese problem - sort of. Actually there was a reorganization on the 1st of September 1943, kind of a out of channels...

Peterson: They weren't out of channels though...

Baker: They weren't really in the same Chain of Command, right?

Phillips: No, they weren't. They were parallel and competitive. We asked [redacted] about this and [redacted] asked Rowlett about it and neither one of them confirmed it.

Peterson: There were some tight jaws.

Phillips: Well, it was as though they don't remember. At any rate, they ran it and this brouhaha over Frank Lewis and the success led Rowlett to make a change because [redacted] really didn't like managing at all. He was a linguist and so they brought in [redacted] who had been in the French Section. He ran the problem until he was mustered out of the Army. He was in bad shape physically. He had terrible emphysema even though he was in the early 40's. He ran the problem and he really is the one who got the problem on the road, I think. He recruited people like crazy. He used to make a great thing out of the fact that he was recruiting all the misfits which tends to be true. If you start a new organization, you're going to get more people who are misfits somewhere else. They may work their hearts out for you but they may have been unhappy where they were.

Baker: They were unhappy somewhere else and that's why they came.

Phillips: He could recite the names of all the people who had come. A lot of them had come off the Japanese problem.

Peterson: What was the first success? Was that the VINSON from your report or was it... ?

Phillips: Yeah. It's in the report. It was finding depths.

Johnson: It was on a Dip crypt system?

Phillips: Yes. In fact it was on the Trade System and that was generally... I call it serendipity,... They worked the trade problem first because it was much more voluminous. Had an easier to understand indicator and, in fact, it turns out that that's where all the real depths were except for a few that were more interesting. If they hadn't attacked the trade problem first, they probably would never have gotten anywhere.

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Johnson: Are we talking (B% Big Squeeze)? What would you consider now commercial?

Phillips: Ah, what we're talking... What they treated as Diplomatic. They transmitted as Diplomatic and [redacted].

Johnson: Okay.

Phillips: We called it... We gave it the title... Ultimately, [redacted] at the time and it was... It looked exactly like Diplomatic traffic except it would say. It would have a clear address, "The Ministry of Foreign Trade".

Peterson: It was economic or mostly trade kinds of things?

Phillips: Yes. I guess it was Commissar Foreign Trade, is what it was.

Baker: It was radiotelephone?

Phillips: Well it was going commercial. It was going RCA and RCA...

Peterson: It was just telegrams that you were getting copies of. You weren't intercepting it.

Phillips: That's right... Okay... Well, it had been intercepted by the USM- 3 earlier. In fact, there is some of it... As we've gone through the traffic, we found some of it but the bulk of what we got was drop copy and the bulk of what we got was Washington and New York and that's where the bulk of the traffic was anyway.

Johnson: Did any of that go in and out of AMTORG?

Phillips: Yeah. In New York it was called AMTORG but it was operating, I believe,... I guess it was operating in a separate building from the [redacted]

Baker: So that was clear like the other groups.

Phillips: Yeah, clear, yeah. So they had collected that and that's where the first successes were. Well, that happened in, it was recovered in the first week of October of '44. It was some time before they really understood what their success was. What they'd found was some strong hits between messages which produced what were clearly depths but here it is a depth of two and the conventional wisdom in those days was that you could not read a depth of two. In fact a [redacted] who had found most of these depths spent the next six or eight months trying to classify them. Defining them as depths of two. He just couldn't believe that they were only a depth of two. I sort of attributed most of the early successes to [redacted] was an archaeologist. In fact, I don't know why we

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never referred to him by "Doctor" but he was already a Ph.D. and he left and went back to the University of Chicago after the war and was fairly distinguished as the University of Chicago published his book (B% then. That thrust him in other archaeology.)

Baker: Did he have any practical experience in archaeology? Did he work in that before?

Phillips: Yes, he had. In fact we had a number of archeologists at Arlington Hall because they couldn't go and... ..

Baker: ... and dig.

Phillips: ..and dig. Yeah. In fact one of them, whom I knew casually, who worked on the Japanese military attaché was a guy named Gus Swift the V (Fifth). He was the heir to the Swift packing fortune in Chicago but he was an archaeologist. He didn't want nothing to do with meat packing.

Baker: Was it the training and inferring things from pieces in archaeology that... or is it just generally...

Phillips: I don't know. I suppose. I suppose and that... Well I think they were just "displaced persons" as I would call them. They couldn't go and dig, as Charlie said...

Baker: They were just available.

Phillips: They were available. The same thing is true of missionaries. There were a number of missionaries, of course, who had been in Japan. Now they were recruited for their language skills... There were a lot of academics like that. Who simply... The schools were way down in enrollments. The enrollment in schools was way down.

Johnson: An archaeologist friend of mine contends that there are also similar problems within archaeology and cryptanalysis.

Phillips: Oh I think there are.

Johnson: Therefore archaeologists tend to make good cryptanalysts and vice versa.

Phillips: The Agency has tried, again and again, to decide what makes a good cryptanalysts without any real successes. There are people like Frank Lewis who was, basically, music was his only skill. Perhaps one of the cleverest cryptanalysts that the Army side ever had was... I don't know what Raven's background was... It seems that, if you were to count, there were a lot more chemists than anything else and I don't know whether it's because they hated chemistry or [2-3 Blkd by laughter]. Ollie Kirby was a chemist and Dale Marston was a chemist. Dottie (B% Bloom [Blum]) who used to work for me was chemist and there were a very large number of people here who were chemists. You have to say, in the modern world, there are mathematicians, of course. In fact, I've found that the mathematics that I've had as part of the chemical... starting off in chemistry was extremely valuable. At any rate, after that success in the Fall, there was an influx of people. So when a success occurred there

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were probably 15 people and that had grown to 40 or so by May.

Baker: Well you said that you had the first success in '44. It must have been in '43.

Phillips: '43. Yeah. October 1943.

Baker: Then by '44 you had 40 people on the problem.

Phillips: Yeah. By May of '44.

Baker:

Phillips:

Peterson:

Phillips:

Baker: This was all about shipments...

Phillips: Right. Lend-lease or (2-3 Blkd by over talking each other]

Baker:

Phillips:

Peterson:

Phillips:

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As I said, the problem grew pretty rapidly. There were people coming... misfits coming for a whole round and that growth continued through '44 and the successes continued. We began to understand the problem and successes and some of the other diplomatic systems began to be in depth with the trades. That's where the real finances were. So by the middle of... by the end of World War II there were probably already a hundred... about a 125 people working on it. Could have been more. Let's say about the time of VE-Day. Now one of the greatest disappointments that we had

Peterson:

Phillips:

Baker: He doesn't really know, (B% what he used to do), but he loved working the (B% questions). He became very much of an authority.

Phillips: Yeah.

Johnson: What about the Soviet naval problem? Were you working any naval traffic?

Phillips:

Peterson: They have their own Navy?

Phillips: Yeah.

Baker: They had Air Forces even then in World War II.

Phillips: And in fact...

Johnson: True.

Phillips: They were working it in NSG and they worked some on the Dip... .

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Peterson: Basically border protection [believe there is a side conversation going on here about [redacted] while Phillips is continuing on Naval coverage]

Phillips: ... some of the Naval problems.

Johnson: What was this stuff that Tordella was bringing in from California? He said that he was getting a [redacted] That was around '44.

Peterson: Yeah, but then NSG or OP-20G was working that. Cecil wouldn't know. Unless you knew it from...

Phillips: Well we did have some liaison with them. I went over there a couple of times but it was on the [redacted] I don't think that we ever talked about the naval problem but people like Carrie Berry began to work, to do traffic analysis and there was a man named (C% [redacted] who was the traffic analyst on the naval problem back then at NSG and she'd go over an talk to him. I don't know if there was [redacted] coming in '44. I would have said that was later.

Peterson: I don't think... There might have been some early stuff... the (C% [redacted]

Johnson: He says that there was (3-4 Blkd) cooperation in (2-3 Blkd)

Peterson: What's the (C% [redacted] code... COLERIDGE. We were getting COLERIDGE

Phillips: Yeah he told us that he was getting... [redacted] and I went over to talk to him. I think we talked about that and... He talked about it but I don't think he talked about it as printer, I think he talked about it as Morse, as such, but it did evolve into printer at some point.

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Johnson: In fact, he talked to us about building the first equipment to intercept the (1G)

Phillips: He said that he identified the times all right?

Johnson: I'd have to go back through the tape.

Phillips: He and Ollie Kirby... Of course that was after he came back here. He and Olllie Kirby worked, apparently as a team.

Baker: I heard it was the middle of '46. I haven't heard the tape but somebody told me it was in the mid-46.

Johnson: No. It was definitely during the War. Before the War was over.

Baker: Worked at the... Soviet printer?

Johnson: ... because the Soviets were still allies and it was during the War but I couldn't remember whether it was '44 or '45. February was month. At any rate... .

Phillips: The only thing that is hard to understand about that is that in '45, right

[redacted]

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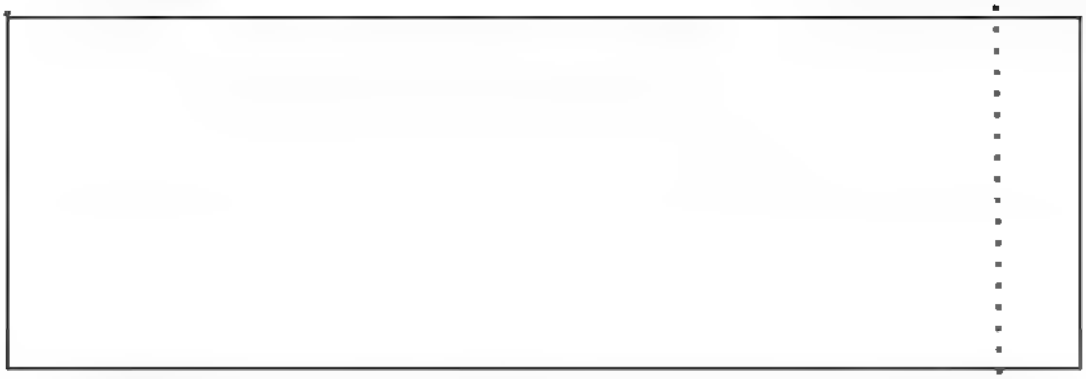

Johnson: I don't remember what it was, as a matter of fact - pageprints or it could be very well done.

Phillips: Might talk a little bit about the business of the (B% fly). It was concealed. It was concealed because it was, in general, they were allies and there was a general concern that there would be people who would be very unhappy about this. In fact, there was concern that the Roosevelt administration would be very unhappy that we were working Russian problems. There were people, of course, who were all over the Roosevelt administration who were either very strong sympathizers of active KGB agents so it's hard to tell exactly who was talking and so forth. [redacted] was very concerned. He was very anti-Soviet and he was very concerned that somebody might find out that we were working it.

Johnson: The idea, I think was that, if I can inject... that they were trying to keep Henry Wallace in line. If Wallace ever found out, or if that wing of the Democratic Party ever found out, there would be hell to pay. It wasn't necessarily Roosevelt as much as it was Wallace and the Party.

Phillips: Well, I don't know that its ever been pinned down...

Peterson: The Roosevelt staff, they found out later, had spies on it.

Johnson: True. True.

Phillips: Oh yeah. (C% Lawson Curry) for one. But one of the concerns was that Mrs. Roosevelt... that she had said that she didn't want them to work the thing. I don't think that anybody knows whether there was any real truth. That is certainly true I suspect (1-2G). I don't think any of you all go back far enough. There was a very strong pro-Soviet because we were hoping that they would help us win the damn war... We didn't want to have to go into Europe against the full brunt of the German Army and so we were doing everything we could to help them win their side of the War. I guess that, in some cases, it went much further than that, obviously. There were people who were caught up in the whole thing. There was a definite effort to keep it quiet but, as far as I know, as soon as World War II ended, those reps resolved that the...

Peterson: We had the BOURBON covername (that) they used for years.

Phillips: Well but we didn't... ..

Baker: ... .We were not supposed to use the word "Soviet"... "Russian"

Phillips: We didn't obtain quite the same thing. The first days we never had anything on the walls. We never allowed a dictionary to be out. Everything was locked up. People were told... and [redacted] was... He was... We had a bunch of these louvered partitions and he sat with his back to the one that said, "open end". The partitions were these big old wooden partitions and they were separated just about that much. That's how you got in and out. You walked by him. Within ten feet of him, every time you went in and out so nobody came in and out who didn't belong. He would chastise people if they were talking too loud or if they were talking about something that... We went through... would people today believe? We went through the unclassified trash every night and dumped it into a secondary container and stand there with a stick and raked through it to make sure that there was nothing written or printed. Now that was overall. That wasn't just the Russian problem. That was all over the whole place. That was the idea. Can you imagine that. People doing that today? But we did... At any rate, there was a lot of concern about letting anybody finding out that we were working the Russian problem.

Peterson: But after the war, that loosened up a little.

Phillips: After the war, it loosened up quite a lot.

Peterson: There were still the Covernames.

Phillips: It was gradual but the covername was on and, as we talked before, I don't remember whether we thought the covername was to be protection or exactly why...

Peterson: It was a project name.

Phillips: Yeah. I had some confusion in my own mind because, in the early days, I assumed that ULTRA was just a classification for everything and it wasn't. It was just the.. I guess originally, it was just the name of one of those things.

Baker: Well originally, but... I maybe used it for all, well, probably for all radio integrated intelligence.

Peterson: We agreed on it with the British. It sort of meant "Cryppie". Cryptanalysis.

Phillips: Well okay. Well then, that's the way that I interpreted it. I didn't know that was a classified word. Now it was a classified word.

Peterson: It was even classified? I didn't know that.

Phillips: Yeah. Yeah. In fact, later on it was and I'm not sure even today whether the codeword isn't classified. I don't know what the codeword is anymore.

Baker: The one we're using now is straight confidential. The codeword themselves. Okay. That's probably a good point. [TRNOTE: Tape switch appears to take place here.]

[End of Tape 1, Side 1]

[Tape 1, Side 2]

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Phillips: All right. Well, let's see. I've talked about really sort of up until the end of the War. I would say that somewhere in the Summer of 45, it was around 125 people in one Wing. Then, of course...

Peterson: Oh, this is ASA at that time

Phillips: This is ASA. Yeah and I don't know.

Peterson: You don't knew what the Navy side...

Phillips: I don't know what the Navy was doing...

Peterson: No interchange with the Navy...

Phillips: Well, they did but...

Peterson: You probably didn't keep track of the numbers of people so...

Phillips: I didn't both to keep track and I never talked to them about anything except [redacted]. So what we... We would go over there from time to time and talk with a guy named [redacted] who some of you know... There was Lawrence (1-blkd by new transmission)

Peterson: (Talking over interviewee.) He wrote the (2-3G)

Phillips: [redacted] was working on [redacted] and a guy named [redacted], a Lieutenant... Lt. Commander was in charge and after the war ended Mrs. Driscoll got involved in [redacted] but I don't think she made any real contribution. My knowledge of what the Navy was doing is virtually nil. We mushroomed after the War in spite of the fact that General [redacted] gathered us all together on the lawn back of the headquarters building and said, you know, as Wilma Davis tells it, "Here's your hat and coat. What's the hurry? speech." He said, "The war's over. We don't really need all of you people. Some of you ought to think about going back to school and resuming your previous activities." There were a lot of people who left. One of them was Ann Caracristi who left and was gone for a year or so and went up to work for the New York Daily News and came back. I guess that she was gone for a couple of years.

Peterson: A year with the tabloid press?

Phillips: Yes, but there were a lot of people who did just leave and didn't come back because there were a lot of people who would... The ones I called "The Displaced Persons". We lost a lot of good people. A lot of people in the military were mustered out and decided to go home and resume their lives.

Baker: There was no active effort to convert them, generally?

Phillips: I don't think so. That came a little later.

Baker: Some of the odd one like (B% [redacted]) who had been there to begin with.

Phillips: Yeah the ones who had been there to begin with. Most of them.

Johnson: That had been their career before there the war.

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Phillips: Yeah. Those people stayed. We had an influx in the Fall of '45. We must have had 200 or 300 people added to...

Peterson: Some of the literature says that they took the best of the Japanese cryptanalysts and moved them to the Russian problem. That might be just...

Phillips: I think that's just... .

Peterson: Just overstated? [TRNOTE: Segment ends and resumes with conversation in progress]

Phillips: ...publication. I don't know if there was any particular...

Baker: "B" as in band music?

Phillips: Yeah. Uh huh... There were some of the better people, obviously, that came but... For instance, I had, right after the War, I had a section of 50 people for a short time and what we were doing was editing and sending to punch everything that we intercepted. Every message. Every cipher message and making multiple copies of it for a clear exchange with the Brits and the Navy. We were.

Baker: That was part of the exchange...

Phillips: Yeah and I'm not sure. We may have been punching some of the Brit stuff.

Peterson: There were a lot of problems. They didn't know how to... They copied everything by hand and didn't have multiple copies.

Phillips: Right. So there were 50 gals. Most of the gals, I don't know whether there was a... well, one or two men. A guy named [redacted] was in it and a couple of other people but basically women. As I say, that was a hell of a lot better than [redacted] back then. That went on for a while and then in '46, I went to GCHQ in June of '46 as a junior liaison officer and if we're talking about grades - I was a GS-7 when I was at GCHQ as a liaison officer.

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Johnson: Where were they located then?

Phillips: They were located at Eastcote which was kind of a suburb of London.

Baker: They had moved there in '45 or '46.

Phillips: They had moved there earlier than '46 because Edward Christopher had been my predecessor and he had started at Bletchley Park and he ended up at... Had it moved to Eastcote while he was there. He went over on a 6-month basis and so did I. We were on TDY is what we did. Extended TDYs.

Johnson: In your definition, what was "LSIC" as opposed to GC& CS.

Phillips: LSIC was a classified name... for GCHQ.

Peterson: Yeah. From my studies of this, GC&CS was changed to GCHQ in the Spring of '46. Wish I could really pin it down to a month... but GCHQ

didn't want to use that term for some thing and all correspondence had to be LSIC, the London Signals Intelligence Center. Now, what the hell difference it made is beyond me but all the literature, for a couple of years after that, was LSIC. I got all this documented. Then, finally they said, you have to use GCHQ.

Phillips: It would appear to be confidential, I think. I mean...

Peterson: It's weird.

Johnson: It really gets confused in the old documents that I'm looking at. That's just what I finally concluded.

Phillips: Well, I think that it is confusing. Not that it makes any real difference but...

Peterson? I know it's [redacted] Well I wanted to bring up [redacted] because I've been reading his newsletters and I' m getting very impressed with the book... about 27 of them from about May of '46 when he became...

Phillips: I don't think that I've ever seen those.

Peterson? Absolutely marvelous stuff. No doubt about it. In fact I'm preparing to propose that they be published. I'm assuming that he's not a complete ding-dong. He was extremely prolific. Once a week. He wrote about 27 of them from May '46 when he was first made the first Senior Liaison Officer to about January '47 when he was relieved. They continued to be printed but they weren't as prolific. They weren't as interesting. He would talk about his dinners with Ed Travis and (C% [redacted] and end up in the gossip and all the... Go into great detail. It's just fascinating reading. Looking back, he must have been a very intelligent man or was he...

Phillips: He was a very intelligent man. I... he was unmarried. I guess he... I suppose that he was gay. I don't have any idea. But he didn't show any august signs of this. He was very, very (1-2G), they say and I don't know whether he had an academic background or not.

Peterson: He wrote like he did. He had a huge vocabulary and was very articulate.

Phillips: He stayed in London the whole time and he'd come out to Eastcote about twice a week in the afternoon. The thing that used to always amuse me was... He'd come out and he would... Had a briefcase and the briefcase usually contained one message, a whisk broom with which he whisked off his uniform because he was wearing his uniform... ..

Peterson: He was supposed to be in civvies, I believe.

Phillips: Yeah but sometimes he was in a uniform... and a buffet for his shoes. Before he went to see Travis, he would always whisk off his clothes and shine his shoes.

Peterson: He went into one section of the letter. Colonel [redacted] came over. He was the rep who replaced him. He came over in June and the guy, Colonel [redacted] had come with his family but no civilian clothes. [redacted] wanted to introduce him to Travis out at Eastcote and he had no civilian clothes but he had to go in civvies according to this thing. Fortunately he fit

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[redacted] could wear one of [redacted] suits. You start to get the sense that this guy was real quick. They had clothes problems. Other people had problems... I mean it was 40... The post-World War II was a pretty poor time, I suppose.

Phillips: Yes, it was. In fact, my impression is that it was worse right after World War II than it was during the War or two or three years later but... The lack of influx of that American money and troops and so forth.

Baker: ... and manufacturers had a problem.)

Johnson: Where was Eastcote in relationship to London?

Phillips: Well it was west-northwest of London and it was about an hour's train ride.

Peterson: It was about 10 miles north there as opposed to Bletchley which was about 30?

Phillips: Seem like it was more like that... more like... I've got the data [at] home if you want it. It was... I don't know what it'd been... Well, a lot of barracks buildings is what it basically was. It was some kind of...

Johnson: British Army Post?

Baker: The WRENS had been in there according to what I read.

Peterson: That's one of the things about [redacted] He describes Eastcote. Basically it had two parts and you had a path that you had to walk because there was a typical British... what do you call these paths that they can walk...

Phillips: Well, a public right-of-way. Actually they had to put (2-3 Blkd)...

Peterson: A public-right-of-way. It cut Eastcote right in half.

Phillips: That's right. They had to put a fence on each side and they put a bridge over it.

Baker: Then they put a bridge over the fence.

Phillips: Two main buildings.

Johnson: Did you go to Camp (C% San). All those... all kinds of bridges.

Phillips: He was the boss. Nominally, I guess, Dale Marston was my boss because he was the senior Army Liaison Officer.

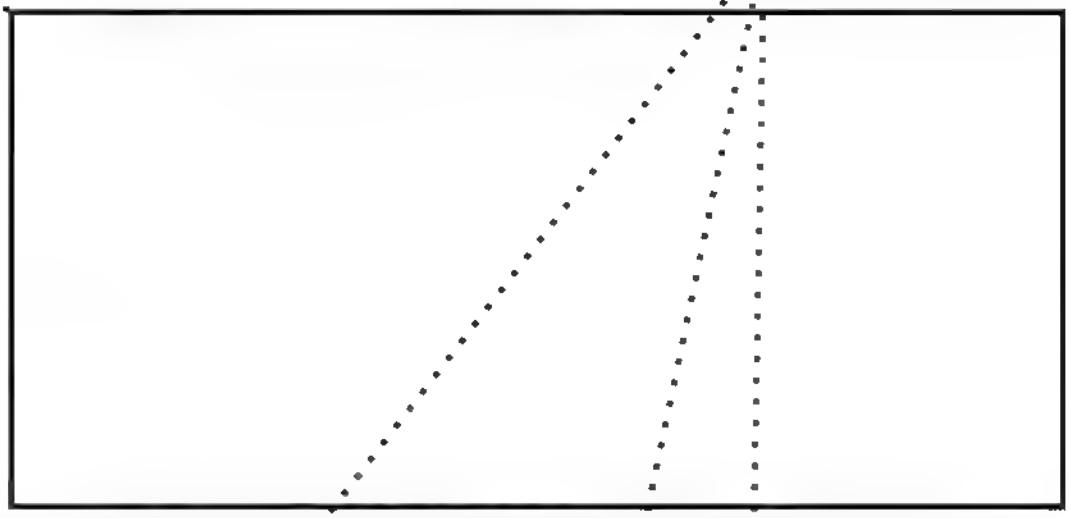
Peterson: He replaced [redacted]. At the same time he...

Phillips: Marston was a Major, I guess.

Peterson: Yes. Major Marston... Was that Dale Marston? The same guy?

Phillips: Yes. Dale Marston. Yeah. Sure. Anyhow. That was an interesting assignment.

[redacted]



Peterson:

Phillips:

Peterson:

Phillips: Herb (B% Conley) and Terry (B% Berry), Jack O'Gara worked with him and two or three others like that [redacted] in fact, was the premier, was the Sergeant who was the premier backup analyst at Arlington Hall. They set up a Traffic Analytic Section and began to train people to do things and by '46 there was a whole Wing of traffic analysts. [redacted], I guess, became the head of the Traffic Analytic Section. Herb Conley came over to GCHQ at some point around there.

Johnson: Question.

Peterson: But he replaced. He was a Major... He came to SUSLOL... What was it... Herb Conley became a SUSLOL later than that...

Phillips: That was much later. He was there around '47.

Baker: He must have replaced (B% [redacted] then?

Phillips: No. No. He wasn't a Senior Liaison Officer.

Peterson: Oh, he wasn't a Senior Liaison Officer.

Phillips: That came much later. Yeah.

Johnson: Talk about Jack O'Gara?

Phillips: Talking about Jack O'Gara. Yeah. He did end up in that role after the OSD and he got a lot of bad press at NSA because, I guess, he was making tough decisions and... decided he wanted things to be cut back and so forth. Nobody likes anybody who has to do that.

Johnson: Especially when the team... [blkd by several voices]

Baker: Well, that's it. Nobody is quite as vulnerable as the hometown boy made good at nothing. [laughs].

Phillips: At any rate, I spent six months at GCHQ and I don't know of anything particularly exciting that happened during that period. [redacted]

Baker: That's also called LONGFELLOW, isn't it.

Phillips: Right.

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Johnson: LONGFELLOW, okay.

Phillips:

Peterson:

Phillips:

Levenson and [redacted] and so forth.

Johnson: Now did you live in Eastcote while you were... .

Phillips: No. I lived in downtown London. I lived in Mayfair in what was, essentially a rooming house. 5 Queen St., Mayfair which was in a very prestigious area compared to where I was before. Then we moved up to a place on Marylebone road. Marylebone and Pine St. as a matter of fact. and then the last six or eight weeks that we were there, we rented a very plush flat on Baker St... It belonged to a British theatrical couple who give... What did we call it? Christmas pantomimes and they played roles and the husband typically played Mother Goose and the wife, typically, played Jack-in-the-Beanstalk. In fact, this couple was like that. He was short and kind of fat and she was tall and skinny. We rented their flat with a maid.

Baker: It wasn't number 24 Baker Street though, was it?

Phillips: No. No, but it was right, directly across from Baker St. station.

Baker: I actually lived at 24 Baker St. at one time but it was at Ft. Rucker, Alabama.

Phillips: Not quite the same. It was a wonderful. I mean it was a very elegant apartment and we paid an arm and a leg for it, I guess. Both Dale and I were... Dale came back a little later than I did but we were ending our tours.

Johnson: Where was your office?

Phillips: Such as it was. It was at GCHQ... [stops] at Eastcote.

Johnson: That's where you worked?

Phillips: We had two rooms at Eastcote and that was essentially the office. Two small rooms.

Peterson: I notice that you did some liaison work. I think you signed some things that I've seen but mostly you were a cryppie there, weren't you?

Phillips: Well, no.

Peterson: Were you strictly liaison?

Phillips: Mostly liaison. Yeah. I don't know how much... I thought it was... I found it frustrating. Part of it was my age. I was 21 and I don't think the Brits were all that friendly toward a 21-year old.

Peterson: Um. They were so much older.

Phillips: They weren't all that much older but guys who were 26 don't usually want to go around with 21-year old. I don't think very much of liaison jobs anymore. Anything really important, [redacted] came out to handle himself and then there was Dale Marston, so it was kind of a third tier kind of thing but it was interesting place. An interesting time.

Baker: This is not related but just a quick question. They mention going to Broadway and it seems to be related to [redacted] Is Broadway the location of the [redacted] Do you remember?

Phillips: I don't...

Baker: They take a reference. You know, like Barclay Street and...

Phillips: So and so was Broadway? I do not know. I do not know. We had... there were military people who handled the liaison on Product (reports). In fact, there was an Army officer, a Lieutenant named (B% [redacted]) who would come out everyday, or every other day, I guess, and look through all the [redacted] He would pick out anything they wanted and take it back to London and then they [redacted] The Navy had similar kinds of things except that they handled it a little differently and I'm not sure exactly what they did.

Baker: We were producing those... NSA was producing those serialized intelligence cards... Now I assume they were [redacted]

Phillips: I do not know. I mean...

Baker: You would have been, maybe, one of the ones who would have made distribution out there?

Phillips: [redacted]

Baker: ... and still is...

Phillips: [redacted]

Johnson: How many of you were out at Eastcote? Just you and Dale?

Phillips: At Eastcote there were four of us, I guess. A Navy Warrant Officer named (B% [redacted]) who was a Cryptographer. We had our own cipher system there. I guess there was a third room that had the cipher equipment in it. [redacted] A gal who married [redacted]

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[redacted] I believe

Johnson: I worked with Jerry. Never met his wife.

Phillips: Yeah. They're long since divorced. I called her a while back to talk to her about... to see if she knew anything about some of the stuff that [redacted] and I were doing. And Dale and me. Then [redacted] would come out, occasionally and a Navy Commander [redacted] would come out. I don't know what his background was. He was socially prominent in Washington and was... I was told that [redacted]

Peterson: He had non-COMINT jobs, too. He interfaced with the FBI and...

Phillips: Uh huh. Then Commander (B% [redacted] came and shared a room with me about the last month and a half before I left. He came and... He was much more just a crypt worker. He was really much more interested in... Like Frank Raven in getting problem worksheets and dragging them off to his desk and working on them than anything else. I don't know that he had any particular liaison duties while he was stationed there. I think there were, really, only four of us, full time, at Eastcote.

Johnson: What else do we have on Eastcote? When we get you back in?

Phillips: I don't know that there's anything else on Eastcote?

Baker: Were you only there the six months or was there...?

Phillips: Only six months.

Peterson: In fact, he was rushed back...

Phillips: I was right there.

Peterson: ... and [redacted] got all pissed off, you know, "What the Hell is this guy that he's so important that he's rushed back?"

Phillips: It turned out that... Well I thought it was suspicious but [redacted] thought, "Oh, Jesus. Must be something Top Secret going on." Well, they were running out of money. That was the reason.

Peterson: Running out of TDY funds.

Phillips: It's funny when that happens. You know, you think, "Well, that's just subterfuge." and...

Peterson: That's what [redacted] thought it was...

Phillips: Well, that's right. I had an Army...

Peterson: ... He was quite surprised. "What's the real reason he's going back so fast?"

Phillips: I had an Army Major name[d] Reed Puckett who was working for me...

Baker: I knew Reed. Do you know Reed?

Johnson? We were in a carpool together. Yeah. He died of a heart attack...

Phillips: Is that right?

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Peterson: It was one of many. Yeah.

Phillips: Well, when Reed was working for me, I wanted to convert him and I get back this notice that says "He's unsuitable medically." I figured that was "jam". He failed his polygraph. Well, it turned out that he was. He was in bad shape medically but as long as I was willing to sign a statement that he was needed, the doctors didn't care. I mean, that was all. If I put my name on the line...

Baker: Saving their ass...

Phillips: That's exactly what it was. I couldn't believe it, you know. He had terrible high blood pressure and...

Johnson: Yeah. We went to pick him up one morning and he had died during the night. He had a heart attack...

Phillips: I soon realized that if you put your name on the dotted line, as far as they're concerned, he's healthy.

Baker: The same thing was true of security. If you sign it, they would...

Johnson: I found out, some years later, that you could get anybody in the world as long as your Station Chief would sign the paper. You have to have it.

Baker: Mata Hari?

Johnson: The guys out in Bangkok were marrying bar girls... Well, Okay. Now we've got you back to the United States.

Phillips: Yeah. I came back to the United States. I didn't get back to working on the [redacted] for...

Baker: Was that in early '47?

Phillips: No. Yeah, you're right. Early '47. Sorry. I came back and got married. I'd been engaged before I went over and my wife still doesn't like the fact that she wasn't able to go but it was almost wartime conditions and so there wasn't any real positions...

Peterson: There were real problems.

Phillips: ... and we didn't have any money so it wasn't... I guess if you had enough money you could have arranged it. So I came back and got married. She worked at Arlington Hall. I worked on some... The first thing I worked on

[redacted]

[redacted] came. I worked on that for several months.

Peterson: Very sensitive.

Phillips: [redacted] They... [Several speakers going at same time and blocking each other]

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Johnson: Oh yes. I know who these guys were.

Baker: Were they perhaps military initially?

Phillips: [redacted]

Baker:

Phillips:

Johnson:

Phillips:

Peterson:

Baker: Well, I know who it was...

Phillips: They're a historical...

Peterson: [redacted].

Phillips: But it was a different box under...

Johnson: [redacted]

Baker:

Phillips: [redacted] he things that was intriguing was that... Didn't Philby, the other Philby, was in fact the Deputy Chief of one of the collection elements in about '45 or '46.

Baker: Kim Philby?

Phillips: Kim Philby. One wonders, you know, how much information he was getting and what he was doing about collection. Whether there was any way he could piece that together. He was in a critical position. Then, at some point, I went back to work on the [redacted] and worked on it from then until June of '50.

Johnson: Were you there on Black Friday?

Phillips: Yeah, but now I...

Baker: There really wasn't a Black Friday.

Phillips: That's the argument we make. It wasn't... Black Friday, in a sense, occurred over several months, by my definition. What happened was...

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On the 20th of December 1949 all the indicators disappeared on the

Baker:

Phillips:

Baker:

Peterson:

Johnson:

Phillips:

Baker:

Phillips:

Peterson:

Phillips:

Baker:

Phillips: ... but it's almost certain that Weisband had access to it. In fact I'm almost sure that he did some of the translation but I can't quite pin that down but he had access to everything in the section so there's no reason to believe that he did not send word back that... .

Baker: It's interesting that your characterization is so different from what is in the records. Ollie Kirby thought that is was the goal of the [fades] and two or three say the same thing on the video tapes that we have for the symposium.

Phillips: I think that they're dead wrong. The curious... The most telling thing is the

Peterson:

Phillips: I think... In fact... One wonders if there may not have been... The Black

Johnson: [redacted]

Phillips: Right.

Johnson: This sounds very different from that. This sounds much more comprehensive and also lasting over a longer period of time.

Phillips: Well, it lasted over a longer period of time and, in fact, some of the conclusions of that date were that this is just the Russians regrouping after the War. That they had realized that they had all these weaknesses and after the War they were regrouping and tidying things up. You'd still believe that, I think, if you didn't know that there was a Weisband who was there, wandering around, talking to everybody, translating messages, doing all the things that... All the things he knew. He had every availability. He could have carried material out and photographed it and brought it back the next morning. We don't know whether that happened or not. He would have had no difficulty at all. We didn't do registration of documents. We had every limited... The most interesting case. When I called [redacted] former wife... [redacted] called her to see if she knew if she knew about any of the people that [redacted] and I were interested in. I asked her about Weisband which was one of the questions I asked of almost everybody that I talked to. She said, "Yes. Funny that you ask and say that." She said, "I was filling in for Margaret Hancock who was producing a special report for [redacted] who was the head of ASA and Weisband came to me and said, 'Could he have the Special Report?'. I says, No, I can't give you the Special Report. He says, 'Margaret Hancock will give me the Special Report' Margaret came back and she said, "Well, he's bored and I let him see it." When you think back on all the things, that's the way he was. He was casual. He wasn't aggressive about doing it. He was low-keyed and he pedaled jewelry which may have been just a ploy for wandering around but it may have been genuine. His brother had run a jewelry store in New York and he said that his brother had died and he had all these leftovers. It may not have been genuine but it...

Peterson: It sure gave stock. It gave him an excuse to go from desk to desk which you didn't normally do much of in those days.

Phillips: Well you did. Yes.. It was pretty open. It was open through the Agency. Nobody had an office. He would come around to me and say, "What are you doing?" and if I say, "Nothing important." He might wander off, you know, like chit-chat. If I had a worksheet on my desk, he might look at it and say, "Can I help you?" because he was the senior Russian linguist at one point in '45. He was the guy who had more knowledge of Russian

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than anybody else.

Peterson:

Phillips:

Peterson:

Phillips:

Johnson: Where was Weisband then? Was he still there?

Phillips: He was still there. Yeah, and he might have been... I'm not sure what he was doing on that date but he might have been,... A little later on he was working on Russian voice. So it got through him.

Johnson: Then what happened?

Phillips: Well he was fired in '50.

Johnson: With what charge? Do you know? [Very weak]

Phillips: I'm not sure exactly what the charge was. He and his wife were both suspended at first.

Peterson: They became suspected actually.

Phillips: Yeah. Yeah. His wife was the chief... A pretty little girl from 30 miles from where I lived in (B% Asheville). Named (B% Mable Woody). he met and married her sometime in '48 or '49, I guess, and they suspended both of them. They had some inside information, I guess but I think when his actual firing came... He was sentenced to a year in jail for contempt of court in California. A Federal Grand Jury was conducting the investigation at the time of his activities. He said that they gave him a waiver to come back later and they said that they didn't. He had refused to tell them and it

isn't clear. He may have been right about the waiver but, anyway, he went to jail.

Peterson: But he was never convicted of spying, per se.

Phillips: He was never convicted of spying per se.

Peterson: [weak] but everybody believes he was a spy.

Baker: Did he end up staying here?

Phillips: He stayed in the U.S. and he turned up down at... In about '58 down in... as the manager of an apartment building where good friends of mine, [redacted] I don't know if you knew them or not. She saw him and reported it to security.

Johnson: Where was this?

Phillips: In Arlington,. On Glebe Road. Just off Glebe Road. I don't know what security did. They went down and checked to make sure that her apartment wasn't bugged or something and then she was... She said that she was approached by the Bureau. The F.B.I.. They wanted her to become an active participant. They cultivated her and she... but nobody knows. One of the guys who defected said something about him. About the possibility that they were going to reactivate a guy who had been spying in the Army or they considered reactivating a guy who describes a guy who sounds exactly like him.

Johnson: Was the defector in the Burgess and MacLean group?

Phillips: No I'm talking about a Russian defector. It was one of the ones that they kept so long that they cultivated so much at the CIA and they kept in (1G). It wasn't somebody (B% after that)... I don't know... I don't know.

Johnson: Somebody probably who probably appears on David (1-2 Blkd by Phillips talking at the same time] knowledgeable at this point.

Phillips: But at any rate, he had access to everything. There's no question in my mind.

Johnson: Whatever happened to him? Do you know if he's dead?

Phillips: He died in '65 or '66 or something like that. '65 or '66. He apparently had diabetes and lost a leg... He was born in 1908 or something and he... But he died and I don't know what happened to his wife and children. He had three children.

Peterson: Was born in 1908 so he was quite old when he worked here compared to you all?

Phillips: Oh yeah. Well...

Peterson: He was in his forties or something and you were only in your twenties, Huh?

Phillips: Well both, [redacted] the guy who, In retrospect... They were all born about that period.

Johnson: Where did Weisband learn his Russian) that he was the Senior Russian linguist?

Phillips: He was born in Cairo or Alexandria, Egypt of Russian parents.

Johnson: And immigrated to the United States?

Phillips: Yeah and it's unclear whether he had got in legally or illegally. Apparently the records just aren't good enough to... But he was inducted into the Army, apparently, (2-3 Bikd by below)

Peterson: They somehow gave him a security clearance?

Phillips: Apparently [redacted] raised any special clearances he needed when he came back. He had been overseas with [redacted] in Italy and North Africa. They were sort of waived. That takes us up to 1950, for me, at least.

Peterson: You worked [redacted] until 1950, then what, I guess

Baker: We'd best change tapes...

Phillips: Okay. [TRNOTE: Interview resumes after tape change]

[End of Tape 1, Side 2]

[Tape 2, Side 1]

Johnson: Did we ever establish... I guess I'll read... but did we ever establish how he... What the mechanism for passing information?

Phillips: We do not know. There is not one shred of evidence. Don't (B% quote) what I said, but circumstantially... It's all circumstantial but there is a shred of... There is stuff before the War that clearly identifies him as working for them. The probability that he would have abandoned that status and come back to...

Peterson: ... to the fold...

Phillips: To the fold is virtually zero.

Baker: Common sense would have it...

Johnson: ... And he had Soviet ideals.

Phillips: Yeah. He had Soviet (fades). It's curious.

Baker: Well it's curious when you were listening on tape.

Phillips: Instant (1M//very weak)

Baker: But he's really dead now so...

Phillips: Yeah. He died in Fairfax.

Baker: You said that he died in '66.

Phillips: Well, he married this girl and had a family and...

Peterson: He only spent a year in prison.

Phillips: He only spent a year in prison.

Peterson: And they may have kept him on like you said. He could get back in a few years later somehow.

Phillips: Yeah. I don't know if they would have denounced him or not. The implication is, that before the War, he was actually drawing money. He was paid as opposed to a lot of the people who were doing it for ideology or something like that. In fact, some of the people... It amazed me when you read about some of the reasons. Bentley was... This was Elizabeth Bentley who was servicing some of these spies was actually collecting dues, Communist Party dues from them all the time that they were spying. He was making a mistake paying his Party dues. [Laughter]

Johnson: She never missed a trick.

Baker: The first Soviet capitalist...

Johnson: We're into 1950...

Phillips: One of the things that I didn't really mention was that a lady named Mary Jo Dunning had come into the section in late 1944 and Mary Jo had been a key punch operator. She had been hired as a key punch operator and learned how to operate all of the IBM punch card equipment which was the main machine tool of those days. I became her apprentice, I guess sometime in the Fall of 44, and in two to three months it was my job to handle what we called Machine Liaison which was all the liaison with the punch card people. I was doing this up until the time I went to GCHQ. Then I turned it over to a gal named [redacted] and after I came back I continued to be involved although [redacted] handled it on a day-to-day basis.

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Baker: After you came back from England?

Phillips: After I came back from England so I was constantly involved with what kind of machine attacks we could do and what kind of things we wanted to do.

Baker: Sort of getting in on the ground floor of computers?

Phillips: Yeah. God knows, if I'd just invested, I would [laughs]

Johnson: Can you characterize your processing in those days as centralized or distributed?

Phillips: It was centralized. There was no distributed processing at all. There might have been for some of the Enigma like problems. Some aspects slightly distributed. If you can picture it, everything was really a black art because you... the average person didn't know what you could do with punched cards. You could do anything with punched cards that you can do today with computers. it just took an infinite amount of time to do some of them but, if you put the right series of steps together, you could do almost anything that you wanted to. It had to be centralized. As I said, one of the things that was nice about it was that it was a black art thing. I'll get back to that in a minute. When I started doing it... Because somebody

could come in with something you thought was preposterous and you could tell them that it couldn't be done. They didn't know. [laughs] What had happened was that I had been doing this with Mary Jo and I had taken it over and became pretty familiar with what you could do. Standing on a street corner in Arlington in 1950... I still hadn't bought a car. I was just about to buy a car, I guess, and a fellow named Bill (B% Lawless or Wallace) who was very prominent in the punch card business, very bright, came along and gave me a lift. I says, "Gee, I'm glad to see you because I've been thinking about coming over to talk to you about coming over to see if I could work in the machine area and learn something about it." Part of the reason I wanted to do this was that, I wasn't sure that NSA or ASA was gonna be continue an operation forever and I thought I ought to have some other skills besides cryptanalysis which wasn't very saleable. At least legally. He said, "Great. I'd love to have you come over." I said, "Well, I was nervous about this because you've got guys over there who had been doing this for 10 years and know everything there is to know about it." He says, "That's not important at all." He says, "We don't have anybody who knows why we're doing anything. We've got people that can run the machines." He says, "Look, most of them have little graphs of what it is and why you're doing these things and why you need to do them the way that you're doing them. So why don't you come over." I said, "Fine." and I walked in to Ollie Kirby, who was my boss and said, "I talked to Bill Lawless and he'd like to have me come over to work for him for a while." Kirby says, "Fine. You can start part-time now if you want to and I'll find somebody to replace you in a few days." and it was all over. That was the way it went. I think, probably the next morning, I began to spend half-days over there. He brought [redacted] in to replace me in the [redacted] I went over and spent a little over two and a half years handling all of the work on the Russian problem that was done by the Machine Section. During that period of time, we merged, or just merged, or were just about to merge with the Navy. I was working with Navy people as well as Army people but all of the Russian jobs, processing jobs, came through me and there were two people working for me who had been doing this before. What you did was write out something that we called "A Procedure". It was a series of written out steps. You'd say, "Put the cards through and do this." and then, "Take the cards out of that process and put them into this process." and stuff like that. There was some special purpose equipment but most of it was punched cards. You could take the cards and put them in a special thing that would do calculations like cross-sums or matching things. It was basically punched cards and about, late in the Fall of '50, I think, but it might have been early '51, we got the first computer that the Agency had access to. It was a computer called Atlas-1 which was built for the Navy. The Navy had asked for it and built and installed it on Nebraska Avenue. It was built by a company called Engineering Research Associates who closely wedded to NSG and the Navy. They were so close in bed that it was hard to tell who was who. Anyhow, the computer was delivered and it

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was a pretty good computer, in fact. They had a magnetic drum that worked pretty well. Everything that went in or not was paper tape and that was miserable. Absolutely miserable. The preparation of paper tape was, with the program and the data, was an absolute (B% crisis), because it had every four (B% words), it had a seven pin overage and if you didn't have that, it wouldn't read in. That was the thing that said "Read" I guess.

Johnson: By the "data", you're talking about the data to be processed?

Phillips: The data to be processed. Everything had to go in by paper tape. It really wasn't very adept at doing significant processing. It was adept at doing significant calculations.

Johnson: Was it being used for CA processing?

Phillips: [redacted]

Johnson: [redacted] was still working for the Navy then, right?

Phillips: Yeah. [redacted] was called back because of the Korean War. In fact, there were several mathematicians from various teams that were called back.

Johnson: He worked up at Harvard when he was called back?

Phillips: Right. [redacted] wrote the program and the program that [redacted] wrote did the job. It was awful slow. It took an hour per pass. You do repeated passes where you're trying to maximize the key when you do this. You do pass 1 and you get a result out and you feed the results back in and try to improve the quality. It took an hour per pass, roughly, on Atlas. A typical solution would take seven or eight passes so it took a whole day but [redacted] did this very quickly. He just applied it mathematically. Hugh

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Gingerich. I don't know whether anybody knows of Doctor Gingerich who is a friend and neighbor of mine, optimized this program. It took only about two minutes to pass. By actually spreading out the data and instructions around the periphery drum at just the tight distance so that it would pick up an operand, combine the two operands, put the result away and get the next operand and go around.

Johnson: How did you specifically program it?

Phillips: Atlas was specifically programmed, initially in binary.

Johnson: Now, how did you input the binary?

Phillips: We input the binary on punched paper tape.

Johnson: Okay. Everyone did that?

Phillips: Yeah. So... and it was a 24- bit word so you put four six-bit frames, or the word, and the seventh, you had the seventh pin over the fourth one. That was the thing that told it to read those four in as a 24-bit word.

Johnson: Were you using a "true" (B% binary) for this thing.

Phillips: You were using "absolute". Ones and zeros... in binary.

Peterson: Ones and zeros?

Phillips: Yeah, ones and zeros. Of course you could... In fact, what they used... Sorry, they used octal, is what they used. So every... The sixth frame... The sixth character... Six bits for two octals... two octal numbers... and eight octals, eight octal numbers in a word. Gingerich would do this with charts. He had these massive charts that represented the surface to (B% ground when you laid them on their side).

Johnson: So there wasn't any computer language?

Phillips: There wasn't any computer language at all. No. Nothing at all. It was absolute. (2-3G/ sound is distorted here). You know, it was clear add... add and subtract and shift left and shift right and there were 37 (1-2G/distorted). but it was... It ran well. Filled up a huge area. It filled up an area larger than the area we were occupying over there. The history area.

Johnson: Larger than the history area.

Phillips: Yeah. Twice that large.

Johnson: The ATLAS? The first one?

Phillips: ATLAS-1. Yeah. 16... It held 16,000 words on the drum and... but it was two machines. Racks and racks of tubes... No semiconductors at all... Anyhow, we used this and so I was using it pretty heavily, I guess. I was feeding more than half of its time It was being used some for Hagelin problems as well for the frequency... Programs for attacking Hagelin and some other non-Russian problems. I was feeding the stuff from Arlington Hall over there by mail. In courier packages... and this was (1-2M/twk]. The Army attempted to build its own machine. It probably had it under

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construction at the same time. It was based on a machine that the Bureau of Standards had developed. It had mercury delay on its memory.

Johnson: It approached the magnetic drum.

Phillips: It approached the magnetic drum. It stored only a thousand words. A thousand (B% three-bit) words, I believe.

Johnson: Only 1/16

Phillips: Yeah 1/1/6... It had a card reader on it so that you would be able to read data in from cards. That hardly ever worked. They finally made it work. It also had magnetic tapes which Atlas did not have and the magnetic tapes didn't work. So the Army machine turned out to be a very limited usage until later on. Oh, two or three years later they finally got it working well enough that, if you had something like a single message on which you... If you wanted to run an intensive attack on that message, that was okay. You could get it in, you know... If you had a 500 letter or a thousand letter message, you could fit it in. It had a lot of instructions that were cryptanalytically oriented. (B% high tech). That sort of thing. There were a large set of instructions for that machine. Very unique but very difficult to program and never really made... I don't think it made much of a contribution but I could be wrong. It may have solved some problems.

Baker: Now, you may have mentioned it but was one of your... one of the [fades out].

Phillips: No. Sam... I don't know exactly what Sam was doing at that time. At some point.. I think they were beginning to start. The project had been called PLANTATION which I think became HARVEST. I think that may have started about that time because I was... Trying to remember what my grade was... I guess that I was a 12... A 12 and he called me at one point and wanted me to come work for him. I opted not to because I liked what I was doing at the moment. I stayed there until... February of '53, I believe. Almost three years and that was the... I had a need for... The understanding was that I would go for a two or three year assignment and so it was easy when I wanted to go back and Kirby called me and said that he had a job that he wanted me to take. I went and talked to him and decided that I'd like to take it. I became, I guess it was a Section Chief... Yeah, a Section Chief of something called "7421" and it had... It was the group that did all the exploitation of isologs.

Baker: Was this in ADVA?

Phillips: No. This is before ADVA. NSA 72 was the Russian problem. 724 was all the manual systems. 7241 was the cipher log, stereologic key analysis. During that period, I was up to my eyeballs in the [redacted] problem although I didn't have anything to do with the translation or anything of that sort but I knew all the attacks that were going on. I did that for a year or so. Then there was a job which was called 724B. We would now call it a Special Assistant. I was the Chief Technical Assistant for Manual

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Systems. I had moved up to that job and I did that for about a year, I guess. Then... Kirby had left and Dr. (B% Ray) took over the Russian problem and, in fact, he brought in a guy named Frank Brugger.

Baker: Kirby hadn't left the Agency?

Phillips: No. No. He went to become the Chief of Collection, I guess. I've forgotten... I think it was called NSA-68... It was called AFSA -68. The level of both where Kirby had been. Tordella became 70 which was All Cryptanalysis. Ray brought in... Dr. Ray or some... Dr. Ray (1G)was the Chief of the Russian problem -72. Then Ray brought in a guy named Frank Brugger who was 724. What I said... I wrote some of this down for [redacted] and then I softened it some... "It was almost as though the Navy had finally gotten their hands on some of these problems and they wanted to get rid of some of the Army types." Because Dr. Ray moved me over to 723 and... He may have had legitimate reasons for moving me. 723, which was the Machine Cipher Group, and by now they were working on a whole set of [redacted] It was kind of a chaotic group because we had a group of senior technicians. In those days it was called 064 which later became P1. Those technicians were in there working and they were fighting with the locals who supposedly were nominally in charge of the Chief of 723. They were squabbling over who was doing what and why they were doing it and so forth. Supposedly, what Ray wanted me to do was to go in there and help smooth some of that out. Well there wasn't any way I could have smoothed it out. I didn't have the rank or the... or the... I really wasn't much... It wasn't much of an interesting challenge so I stayed there only about four months and Herb (B% Conley) approached me to take a job in traffic analysis because he wanted to bring some mechanization to traffic analysis. He was now Chief of 90 which was All Traffic Analysis. I said, "Yes." because... .and to this day... Dr. Ray said, "Okay" Dr. Ray said, "I'm only [fades out]". Tordella was on leave. Tordella comes back and said, "No." I had three sessions with Tordella in which he never admitted that I could go and I never admitted that I was going to give up. Finally he gave up and I went to 90 and, of course, it was probably the most disastrous assignment that I ever had. I went to work. Herb assigned me to 902 which was the 90 staff. The problem was that herb didn't stay more than two or three months and then he left. Henry (B% Herzog) came in as the Chief of 90 and he had no interest in what Herb Conley had done. He had a whole different agenda. In fact, Herzog's primary skill was in counting intercept positions and (XM//fades]. Well shoot. Not a great subject. But a whole set of people around the Agency made a specialty of counting positions. They never did any collection or analysis...

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Baker: A bunch of collection managers.

Phillips: That's right. Collection managers. They'd never done any traffic analysis or cryptanalysis. They just count positions. It's kind of like budget. You

juggle the figures and show things. So I went up and worked on the Soviet Missile problem. I'd sign in everyday and just go up and work on the Soviet Missile problem, on some of the crypt problems with, you know, with [redacted].

Johnson: I'm going to have to... (speech ends abruptly).

[End of Tape 2, Side 1]

[Tape 2, Side 2]

Phillips: [Interview in progress] I think we stopped... I had come back from the Machine Area in '53 and then I spent some time and I went to 90 and I told you that my efforts in 90 were a disaster because Herb Conley had lured me there and he left. So I went up to work on the missile cryptographic problems with the missile problem with people like [redacted] In the reorganization in 1956 when ADVA and GENS were created, I was working on the... I had become a member of a task group that was working on the so-called CABOOSE systems. In fact, I guess that I was the leader of the task group which included, of all the people, people like Sam Chu and Polly Budenbach. It wasn't that Polly really worked for me because she was much senior to me but I was, nominally, the head of the group.

Baker: What was CABOOSE?

Phillips: [redacted]

Baker: Oh okay. It was the name of a system.

Phillips: The name of a class of systems. Yes.

Baker: Thought that you were talking about some sort of generic project.

Phillips: So then I... It was a generic type. There were half a dozen such systems.

Johnson: Did you go to ADVA or GENS?

Phillips: Well, I went to ADVA because Levenson was made Chief of ADVA and Raven was made Chief of GENS at that time. But Levenson had carte blanche from Canine to choose anybody that he wanted. So he asked me to come and be a deputy to Juanita (Moody) who was Chief of ADVA-2. I took this job because it included [redacted] and all the stuff that I knew.

Johnson: Can I ask you what were ADVA-2's responsibilities?

Phillips: ADVA-2's responsibilities were all the Soviet, high-grade Soviet manual systems. So it included [redacted] and the military and so forth. GENS-6, which was where Ann Caracristi was had the low-level crypt systems.

Baker: So the acronyms would have been advanced analysis and GENS was... ..

Phillips: ADVA was called Office of Advanced Studies and GENS was called Office of General Studies and then we had... MPRO which was for Machine Processing and we had some other names like REMP was for research, mathematics, I guess. So there were four letter designations. Just before

that I went to work for Levenson in... Levenson headed a group called O64 ,which was the T-1 equipment. I'm talking about T1 as the... year or so ago when it was T-1. I joined that group so then he asked me to come over to ADVA-2. So there I was back with the Dip problem partially but I was up a notch or two.

Baker: Was this going to be in the senior grade?

Phillips: No. No. I was a 14 at that time. Yeah, I was a 14 and I got a 15 while I was there. I served in that role for a little over four years but it was a deputy... It wasn't much of a job, I didn't think and...

Peterson: They never seemed to be interesting...

Phillips: No, it's very hard and you're very lucky, if you're the deputy, to work with somebody who... Well Juanita was pretty good to work with but... She, I think I told you in the last time... She and Raven were carpooling and they'd get to talking about this need for automated skills and automation skills in GENS and they set up the group that led to the AG-22. I did that for a year and a half while I was her deputy and it was no strain. It was... I had a separate office down the hall and if she was away and I needed to fill in, I could get back to fill in. I did that until the middle of '61, I guess, July of '61.

Baker: Somewhere in there, you moved out to Fort Meade, right?

Phillips: Yeah I had moved to Ft. Meade on the first day of February 1955. I moved into my house in Silver Spring exactly the same weekend the first contingent came into the barracks buildings. The first contingent that came to the barracks buildings was all of GENS and part of... Sorry it wasn't called GENS then... All of 90 which was sort of a GENS and 724 which was the manual systems. Juanita was head of 724. She came out and was in the fourth barracks building and the 90 organization was in number three. So then when the merge... When we became ADVA, we had moved into the new building. No, I'm sorry. we became ADVA before we moved into the new building and we moved into the new building a year later. My involvement there was much the same. The only thing that was different was that we had a number of [redacted] that we worked on and solved. I worked quite a bit on those. That was the other thing I did to avoid the boredom of being a deputy which is work as a cryptanalyst on these [redacted]

Baker: So ADVA and GENS weren't really... They were really divided more by functions. By, partly, primary were these low-grade. Nothing really geographically.

Phillips: That's right. ADVA had all of the high-grade Russian crypt systems. GENS had all of the medium and low-grade Russian crypt systems plus all the T/A. This led to an enormous amount of friction... .

Baker: And there was yet an ALLO that did the Third World.

Phillips: ALLO did the third World, right...

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Baker: … because they were considered even lower grade...

Phillips: Well, no because they were...

Baker: ... they were in another world.

Phillips: ... They were Third World... Well no. There wasn't a third World. It was everything else...

Baker: Everything else.

Phillips:

Baker:

Phillips:

Johnson: Did you ever get involved in Project ODDBALL?

Phillips: Yes.

Johnson: I'm having a lot of trouble getting new documentation on this thing. Was that while you were in ADVA?

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Phillips: Yeah.

Johnson: (1-2G)?

Phillips:

Johnson:

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Johnson: No. and the reason that I ask that was because [redacted] first told me about the project. That he had been involved in the technical side. That project was being worked in parallel with the [redacted] thought... It's a little vague because they were worked... To begin with, I don't know enough about the technology. They seemed to be working very parallel technologies but I don't know if there was a common effort or if they were really competing.

Phillips: Well, there was a sort of competition going on as a matter of fact. Admiral Kurtz, who was DDO, used to come to our... to Juanita's and my office quite often to talk about it. It was curious. I've never quite so close to somebody so high up that he would come to sit down and chat.

Johnson: What job did he do?

Phillips: He was Chief of DDO. Chief of... Chief of (B% Five). He was terribly caught up in trying to capture the [redacted] so he'd come and talk about it. It turns out that the [redacted] systems that were known and had been found... and some of them had been found simply by [redacted] and analyzing it. There was no consistency to them. Each one was sort of [redacted]

Johnson: [redacted]

Phillips: [redacted]

Johnson: [redacted]

Phillips: [redacted]

Johnson: Was there... Was NSA, to your knowledge, involved in the R & D for either of these systems?

Phillips: For the ODDBALL, NSA was involved totally. [redacted] and a crew of people in that was call RADE which was Research and... or Radio Development or something like that... I've forgotten what it was. They were totally involved and they, in fact, built the gear and [redacted] would go out and deploy it. One of the things that he... He went out to Berlin to deploy some form of system and he came back and he really upset people. He reported 57 security violations, I think it was, that he'd seen while he was out there. They were blatant... I don't know what was the... There was a great furor over it. One of it was... There were two that I remember. One of them was that the people in Berlin would pick up the black phone, an ordinary phone, and [redacted] network and the other thing was that he got up on the roof of the building that...

Baker: They quite readily asserted or ascertained a degree... one down.

Phillips: ... and he got up on the roof at Templehof and you could actually hear people through one of the air vents. You could actually hear people talking about SIGINT. Those are the only two that I remember but it went on and on and on. There were people talking in the clubs and so forth.

Johnson: I'll bet they welcomed him back with open arms. [laughs]

Phillips: I don't know... I would guess. I would put my money on the Navy but [redacted] Do you know [redacted]

Johnson: [redacted]

Phillips: [redacted] would probably know the answer to that.

Johnson: Okay. A lot of time, it's just a matter of finding the right person to go to.

Phillips: Yeah. He ought to be... He might be biased, too because he was in the Navy at the time that they were working on it but he was the one pursuing the Navy signal at that time. Maybe you need to factor all of this in and see if you can get a...

Baker: Have you seen him lately?

Phillips: No, I have not.

Johnson: It would appear to me to that he would remember the Navy and he played a pretty good role in all of this... It looked to me like the Army's R&D organization... The ASA's capability to do true R&D was pretty well gutted by the way the system...

Phillips: Well, I'm not talking about ASA. I'm talking about NSA.

Johnson: Yeah, I know, but that the Navy managed to retain at least a capability to do the R&D on the [redacted] problem. They never really gave NSA a very big piece of that action.

Phillips: Yeah, I think that's right. Yeah I think that's right. NSA has tried, repeatedly over the years, to have more influence on the [redacted] problem. In fact, recently, I did some work with R6 on that because they were going to build a whole new system and it eventually got cancelled. It ran afoul of the crash of the Soviet Union. You know - too much money but NSA, R6, was going to design a new, totally new system in which you would be able to store 30 seconds of the whole spectrum and replay it and all in solid state so that you could do almost anything you wanted with it. It was all digital so it... you know... The concepts were fantastic but that got cancelled simply because it was no longer really needed.

Johnson: Okay... That led to interesting questions that I've had about the [redacted] problem because that was a... kind of a nice little portion of this that I felt we needed to talk about...

Phillips: Well, you may want to talk some more at another time but the neat thing that happened on this

OGA

[redacted]

Johnson:

Phillips:

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[redacted]

Baker: This was for what, in the late 50's early 60's?

Phillips: This was mostly in the late '50s and, in fact, it went up to... I guess some of it was read up until the end of '60, I think.

Baker: It wasn't generally known in the U.S. government and any of it was quite possible (XM/fades out)

Johnson: Not until Willy Brandt.

Phillips: Yeah.

Baker: Yeah. Willy Brandt had an Open Door and it was (1-2M/twk) but it was pretty well known in the government, Huh?

Phillips: Yeah, it was.

Johnson: Quite well, as a matter of fact. When we get to [redacted] we'll talk about that...

Phillips: Yeah. [Tape change takes place]

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[End of Tape 2, Side 1]

[Tape 2, Side 2]

Phillips: [Interview in progress when tape starts again]... CABOOSE. It was a system class that had replaced a much simpler system. Frank (B% Wanat) had worked on the missile problem and had discovered...

Baker: Was there much along this point?

Phillips: Yeah there was. They were firing regularly. they were firing V-2s and stuff like that. Frank Wanat discovered the... using this fairly simple system, produced the whole [redacted]

Johnson: [redacted]

Phillips: [redacted]

Baker: See, I did this some 20 years later. We're just trying to find out what (B% was earlier)?

Phillips: Yeah and the CABOOSE system replaced the readable systems but it was interesting that they were still able, pretty much from the pattern of things to predict what was happening because they recovered so much and understood so much about what was happening. Later on there was one in which Charlie Tevis and some people found out that they were using a

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system called... which we called SILVER [redacted]

Baker: Yeah, well, I got to go... The way we worked it in the 80's, I had to get my TK and so we best take off... You don't get involved again with this?

Phillips: No. No.

Baker: We can talk about it [Fades out//Too weak]. We really won't touch on it. Hell, I'm five years away from it now and...

Phillips: Let's se. Where were we? I worked on the [redacted] and then, in '61, ADVA and GENS went away and we now got into what is termed as A Group. That's the designation now. So the high grade systems had pretty much, except for the special stuff that [redacted] and I had been writing about, had almost folded and so ADVA-2 and GENS-6 were combined, essentially, to become the new A6. I became Ann Caracristi's deputy. This led me to say, at one point, that if the Director ever was a woman, I'd surely be the Deputy Director. [laughs] I said this to Tordella and I wasn't sure if he thought it was funny. He looked to me like I was destined to this. I didn't really minded except I...

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Baker: The mandate for the A6 was...?

Phillips: [redacted]

Baker: Were we having any real success with those kinds of things?

Phillips: Well, [redacted] We were doing well with the [redacted] and that sort of thing and developing a lot of comms, I guess.

Johnson: Did A6, in those days, have the voice processing?

Phillips: [redacted]

Plain language Processing that goes with SOAPFLAKES and so forth. Do you know about SOAPFLAKES?

Baker: No.

Phillips: That's the text scanning by machine. Computer scanning by machine.

Johnson: Were you there during the Cuban Missile Crisis?

Phillips: I was.

Johnson: Did you do any processing associated with the crisis?

Phillips: Personally, I didn't do anything that was associated with the crisis except that I spent the night... most of the night that they pulled back the cover on the missiles as the A6 Duty Officer. I came in and slept in the office that night and wandered around the sections. We had a lot of people on and there were a couple of messages that we got that interesting coverwords (sic) on them. We reported those even though we didn't know what the hell they meant. A64, I guess, had earlier... This wasn't at night... had earlier identified, from a personal message, that the guy, the chief of the soviet missiles was in Cuba because he sent a message home to his wife, I guess. They went by that. Okay? But that's the only role I had.

Johnson: There is one factor that I've never been able to nail down and it may not fall into your area perhaps. The reason I ask you is, if A6 did any processing associated with the crisis was that... You know we had the (TRS) Muller out in... off the coast of Cuba collecting a lot of stuff. I think almost all Spanish language but there may have been some Russian voice. I can't figure out what the mechanism was to get those tapes back to NSA. How fast that happened? And that's extremely important for me to know when you talk about NSA being responsive to the crisis. Do you have any feel for that?

Phillips: No, I do not. I think that Juanita Moody might know.

Johnson: Yeah and I've got started talking with her about that the one time she was up here and never really got to the ground and we've never really been able to get it out. That's why, maybe, I ought to take a trip down to Virginia.

Phillips: One of the things they did do, and I don't exactly when this was done... the SOAPFLAKES system had been invented by a guy named Fred (C% Ruffing) in A65 and this was before I became Deputy, A6. What he did was to program the 704 computer to scan plaintext and he was able, in a 4000 word memory, to build in a table... a dictionary of 2000 words or something like that.

Johnson: Was this first time this was done?

Phillips: First time that it was done. He did that all on (B% counting) levels. It was a remarkable... In fact it may have been one of the most remarkable pieces of work ever done here. He had been a linguist - scanner and he learned programming himself. He wrote the program, developed it and, as Larry just said, Larry had a lot of knowledge about this. If you're interested, you might want to get with him. He worked with a group.

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there was a woman named (B% Leila Sherman) who ran a group of about a hundred people... .A hundred women, mostly, who just sat there and scanned plaintext. They just looked for words and Ruffing wrote this

[redacted]

Johnson: This was about when, when he came up with that tool?

Phillips: It came about '58, I think.

Johnson: I didn't get the critical technological until (1G)... (blkd)

Phillips: It really was and... When it was first used, there was a lot of criticism - "Well, it didn't work well." and so forth but I think they soon found that it worked better. Because these gals did not know Russian. Most of them had learned to recognize the words and they had lists and made lists with the words you were to look for. Of course, they probably got pretty savvy at looking at... Often look at just the message... The style of message and tell whether it was just a greeting -" Loves and kisses" as they call them. Used to call them," Love and kisses," messages...

Peterson: In plaintext?

Phillips: In plaintext, yeah.

Peterson: I used to scan that. I think, in every language but I never had any training. [breaks off laughing].

Phillips: Okay, well, that's what the gals were doing but... There's a funny story about this. I don't know if I should tell it on the tape but I will anyway. [redacted] who was the, you know, he was kind of like a bull in a china shop. He was the head of the... He came into the office one night where Juanita and I were working. He said that he'd been around to tour this area where these gals were scanning stuff and he says, "My friends in North Carolina will never believe this. I was just in a section where there was a black girl translating Russian and wearing My Sin perfume." This [redacted] he was like that.

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Johnson: Back to Ruffing's scanner and dictionary. what system did he put it on?

Phillips: He build it for the 704.

Johnson: That's right. You said that.

Phillips: ... and mostly we ran it... It really began to run on the 7094 which was significantly faster than the 704 but it was still a 4,000 word memory.

Johnson: The 704 - Was that not the first major IBM system that we purchased during that period?

Phillips: No, the 701 was the first major IBM system and that was in '53... '54 or '55. The 701 was followed, fairly rapidly, by the 702 which was a non-scientific machine and it was the predecessor of the 705. Then the 704 came along and the 704 was, again, a scientific machine.

Johnson: Then, was it then the 1401 that followed that?

Phillips: No, the 1401 was a separate line of low-cost, low-grade equipment. The 704 became the 7094 and that, when it was the 360 line, and the 1401 line developed as kind of a combination card and computer. The 1401 had card input and you could actually do card processing just as though you had a card machine but you did it with a computer so you'd have... You could have cards in and cards out and you could also have paper tape in and cards out and cards in and paper tape out. People like [redacted] cut their teeth on the 1401. He was a whiz at the 1401.

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Johnson: It was the first one that I ever was. The first U.S. computer that they had in Zweibruecken.

Phillips: Yeah, that's right. That's where we ran some of the stuff on the... Well, I guess... I was going to say, some of the stuff that he'd... some of the first AG-22 stuff when it was back here.

Johnson: Well, would it be possible for you to characterize, for a layman, what the 701 consisted of... Let me back up just a second. We started with the Atlas line development. Now, in terms of general purpose processing, what comes next at the Agency?

Phillips: I wouldn't characterize that one as general purpose. It was a scientific computer because, as I said, you couldn't put anything in and out except by paper tape so it was really a scientific calculator, is what it was. The 701 was a remarkable machine because it had the first magnetic tapes that really worked. I mean, everybody else had been screwing around with magnetic tapes but there were problems that... Some people could make a magnetic tape work. You could write it on one machine but you couldn't read it on another machine. You had to read it on the same machine that you had written it on.

Johnson: Was the problem the synchronizing of the tape drive?

Phillips: Yeah and the other problem was the handling of the tape. IBM had invented the vacuum column which allowed them to have the slack... take up the slack without stretching the tape. Most of the other devices would distort the tape. They had arms. It was wrapped around the arm. That was supposed to take up the slack. Of course, they use those now but in those days they had never perfected it well enough to keep it from stretching the tape or distorting the tape.

Johnson: You can't really illustrate that system of tape drive. You have to see it on video tape to believe that we just ever had anything like that... I remember those things. They still had 'em when I first came in here.

Phillips: The vacuum column was the key to IBM's success and the 701 computer

was a so-called defense computer. It was first called a "defense computer" and they had about 30-some orders for it. It was hard to believe - 30 some orders for it by the time into construction of it.

Johnson: Now, we weren't the first people to order it, were we?

Phillips: We had one of the first. I don't know that we were the first. I don't know. (1-2M/fades).

Johnson: [redacted]

Phillips: As far as I know, there wasn't any. Now the 702 - there was, because the 702 was supposed to be a text processing machine, if you will, and it had the irregular length words and I think that there was some interaction there. And then the [redacted] The core machine in HARVEST was a machine that IBM called the "STRETCH." That is Sam Snyder's domain and this PLANTATION project which had started in the early 1950's eventually became HARVEST and eventually placed an order for HARVEST with IBM. IBM built only six STRETCH machines. It was a financial disaster for them. The one we had was the STRETCH machine with an extra component of these cartridge tape drives and some special instructions which allowed you to do something which was called STREAMS. You could actually give one instruction and process 300,000 characters from just one instruction was just one of the few things. [Very weak chat in background]

Johnson: Where are you going with this now. Are there any other things that you want to talk about in the area of computer modernization during the 50's?

Phillips: Well, I guess the only thing that I would add to all that is that we did begin the first significant, in my mind, T/A processing in the 50's... . early 50's was mostly punched cards and that was the [redacted] and a fellow named Eli (C% Kreisberg) who you must have worked with at some time.

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Johnson: The name is familiar but I don't recall him

Phillips: He was the one who started working... I was in the machine section and one of the people who was working for me was handling the material and we started key-punching it and sorting it by callsign and by Q Signals and so forth... That, to my mind, was the first significant T/A problem treated. There were others where we would treat the callsigns, you know, make a file of callsigns or callwords but to actually treat the transmissions was quite a first. [fades out]. I don't know what else happened in the 50's. We didn't succeed in doing much processing of stuff from automatic... from on-line transmissions until the 60's when we... As I was talking about yesterday, in the process of closing out Zweibruecken, we now had the equipment to capture the stuff as it came in and feed it onto the computers. Although it was still a magnetic tape... We captured it on

magnetic tape and took the magnetic tape over to...

Johnson: You know there's... Sam Snyder says that SOLO is probably the first transistorized machine. I'll have to check my sources. The histories of computers, that I have read, don't acknowledge that. Probably didn't even know about SOLO and probably won't.

Phillips: I don't know that. Was SOLO a prototype that they developed?

Johnson: I'll have to go back and check the information on that but there's been three or four different sources that I've found in the Archives plus Sam Snyder's book that SOLO was the World's truly transistorized computer. I'm pretty sure that was SOLO. I'll have to check on that. NOMAD was a huge thing and SOLO was smaller. That... Some other organization is given credit for the first transistorized machine and I'm thinking, maybe, that this is one of the things that Fred (B% Ruffing) discovered. When he comes here, we may find out that he did, in fact, develop the first transistorized computer.

Phillips: I just wouldn't know.

Johnson: Sure. To change from computers.

Phillips: Well, let me see. Let me go back to my chronology. I was Ann's deputy because we had merged ADVA-2 and GENS-6. I served in that job for a couple of years which was not exactly exciting from my standards. In the first place, Ann had been there for a long time and she was very meticulous and thorough about everything she did and that wasn't exactly my style so were good friends but it just wasn't the thing for me. I was offered the job of being A03. [redacted] in A03, and I was offered the job and I jumped at it for a change. I did that for about a year.

Johnson: What did A03 do?

Phillips: That was supposedly the technical) staff. They were supposed to handle automations, new projects and new ideas and things of that sort.

Johnson: This would have been about?

Phillips: This would have been '63. In '64, I got nominated to go to ICAF and I left. I went to ICAF for a year from August of '64 to June of '65.

Johnson: Did you go down to McNair?

Phillips: Yes. Uh huh. A very interesting year. I came back from there and Levenson was now the head of the computer organization and one of the things that I didn't tell you was... When I was in ADVA-2, I guess it was, and I was Juanita's deputy and was somewhat bored.. This was before the AG-22 project started, Kirby approached me and said, "Why didn't I come to the machine organization?" He was then head of the machine organization. I went to Levenson with this and I got nowhere and I said,... the nearest thing I could think of was telling my father that I didn't want to be his son anymore, because Levenson had asked for me and he this style as if making it like, you know, "You can't do this to me. You're ruining

my life." So in fact I didn't go to the machine organization but when I came back from ICAF Levenson was now in charge of the machine section.

Baker: All of a sudden, it was the perfect assignment.

Phillips: All of a sudden it was the perfect assignment except that the system here had decided to... wanted me to go and be in B Group which Frank Austin... I don't know if you ever heard of Frank Austin or not. Frank Austin was

Johnson: Just by reputation.

Phillips: Was Chief of B Group and he wanted me to be B03. In fact, at the time, it was clear that both, Juanita, who was in B and... I guess she had... I'm not sure what part she had and Milt and the other part and the two of them were certainly, cutting Frank Austin to ribbons. I didn't see how being on Frank Austin's staff could be of any... any good at all. I went to Frank Austin and I said, "No, that's not what I want to do. I want to go to the machine area," because Levenson had already approached me." I did and Levenson promised me a management job and so he said that wanted me to work on his staff. So I wrote some papers for him for a while and did some investigations. As I told you yesterday - Why the system was failing every night when we tried to do the processing - and then, in October, I said, "I'm ready for a job now. A real job." and I almost fell out of my chair because he told me that he wanted me to run the processing system in the basement. What was then known as C-7 which is a lot of low-grade operators and lot of things that I didn't really want to do. He says, "Do you want that or do you want C-5 which is the applications?" I didn't hesitate for a second. "I want the applications." So he actually moved Bob Hagedorn out of C5 and into the C7 job and gave me the C-5 job. Which was great from my point of view and probably good for the whole system because Hagedorn was a good manager of large numbers of people. He was probably much better... I'm sure that he was a much better manager than I was. I think that I was a better technician than he was. So I was there in C-5 for the next... almost the next five years before I went to [redacted] and we developed most of the... Many of the major IBM applications were developed during that period and a lot of them are still running.

Johnson: This is 19...?

Phillips: 1965 to '70.

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Johnson: Okay. That would have really been a critical period.

Phillips: That was a critical period. I had the help of the five people that I mentioned to you yesterday. The Air Force had them under 466L and they loaned them to me. Paid their salaries and some of them were tremendously knowledgeable. Then we had the advantage also of the intern program which was using a large number of interns. The C-5 organization, which I headed, went from 150 to 300 in the five years. We put an enormous amount of effort into the Vietnamese problem, in part because, I guess, I came back from ICAF and I was determined that I was

going to see what we could do and I went to Guy Stephens who had just taken over from (B% Stice). Do you remember Guy Stephens. I went to him and said, "Look, we're here to serve you. You tell me what you want done and we'll do it." and we established a great rapport. Finally Levenson put Bob Drake in and, It might have been Bob Drake before Stephens who had done this (1G) and we found about 25 people doing our best to do something for Bob and we were sending enormous amounts of feedback to the field sites. I don't know whether it was put to any great use or not.

Johnson: Yesterday you mentioned that you were there when they pulled the Zweibruecken operations back from Europe. Did you have anything to do with that?

Phillips: I was at ICAF when they pulled it back and when I came back, Levenson gave me the job of finding out why it failed every night. Just after I took over C-5, the Applications, not C-5, but C-7 created something called the Field Processing Units which helped. I told you the business about going through, what I called the psychological briefing. The motivational psychology. Briefing the people on what they were doing and why they were doing it which seemed to work. Or something worked. We also set up a Field Processing Unit which was run fairly military style. We had a Captain named [redacted] who worked for INSCOM. He was a very savvy machine guy and he started it and set it up on a rotational basis. About half military and half civilians. It became very effective. He had a very effective organization.

Johnson: At this point, what was your raw material input and how were you getting it in?

Phillips: It was being forwarded by OPSCOMM. 75-baud OPSCOMM to [redacted] and was being packed onto magnetic tape at the (C% DOCKSTILE / DOCKSTYLE) I believe...

Johnson: Yeah. I was in [redacted] at the time.

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Phillips: ... and the magnetic tape was then transmitted by something called the DLT-5 which was a UNIVAC tape transmission system, back to the old C-5.

Johnson: Was this our first high-speed data link transmission system?

Phillips: It was a data link transmission.

Johnson: Okay. When it arrived here, how did the DLT -5 upgrade interact with your machine systems?

Phillips: When the output arrived here, we had to process it,... I believe we had to process it on a 1401 to get it back into a form and we began to... We were then putting it through 1410s... or, sorry, 7010s which was just a high-grade version of the 1410 that they had been using in Zweibruecken. In fact we ran their exact software in the beginning. They had had a 1410 and we had a 7010 which was the transistorized 1410 and we would break

the stuff out from the DLT-5 back to virtually the same form which they encoded and used their software.

Johnson: Okay. You were just doing rear-end processing to get it back to... that is you were simply taking Zweibruecken and put it back into the same stuff.

Phillips: Yeah. The stuff had to be fed to [redacted] to get it compressed and packaged but we had to depackage it at the other end and put it through almost exactly as they would have. The difference would have been that at Zweibruecken they were feeding paper tapes in, just one right after the other, as they came from Darmstadt and when we took it out of the DLT-5, we took it out in magnetic tape form.

Johnson: ... and then presumably would have sent it on for further processing in C-5 to get it ready for analysis?

Phillips: Yeah. Yeah. We put it through... Well at first we put it through exactly the same process as they were doing it at Zweibruecken. Then we began to improve on those. [redacted] loaned me, doing the design and then I didn't control most of the programmers. The programmers were in another organization called C-9 and that's where Fred Strub was. [redacted] some of my people designed a new version of exactly what had gone on in Zweibruecken and we built that and that was running by... By the time I left for [redacted] not only was that running, but we had gone to on-line correction which was the biggest change that we made in the long run. We had scopes on the system and the errors popped up on the scopes...

Johnson: I see. You could change them right there to the correct thing.

Phillips: You could change it right there and feed it back in. It's funny, when we first did that, the guy who was doing that up in A Group who was marking the thing. His crew of people would mark the thing and send it back. We'd keep on just put them back in. He said, "You all are just trying to get out of work." I said, "No, no. This is an improvement." I had a hard time convincing him. It was fantastic because, when you marked them and key punched them and punched them and put them back in, there were a lot of errors. We corrected them on the screen and people could see what the corrections were. It was, you know, instant turn-around. We didn't have the problem of a second set of errors. It worked quite well. That was [redacted] I don't know whether you ever knew [redacted] or not. It worked for him very well.

Johnson: Let me, if I could, just take a minute to see if I can articulate this where I don't screw it up when I write it. It appears to me that what... I know what Zweibruecken was working it for... What we called BULLMOOSE report and TECSUMS and that's what you had to work with.

Phillips: Exactly.

Johnson: When you got into AG-22 and IATS, then your primary input, essentially, was raw traffic as it came off the position.

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Phillips: Right. Actually that did not happen till after I went off to [redacted]

Johnson: Right. Right. But later on, that was the next step down the line. But in terms of processing, ah conceptualization, this was simply the next logical step.

Phillips: Right. Right. It did not, by the way, It did not do the AG-22. It was a long time before it replaced all of the TECSUMS and in fact there may still be some today. It replaced things like [redacted] earlier and on some other problems earlier. On the [redacted] thing, I don't know when it ever replaced it. I guess it eventually did. I'm not sure. It turns out that that was trickier and yet that was one of the first problems that Larry and I tackled in 1960. it worked pretty well but I guess that it was one of the things... A lot of things like that were worked... You can get to a certain level of efficiency but getting that last four or five percent is just awful. You just can't do it. It takes intelligence to do that.

Johnson: Once it came off the 1410, can you remember any of the processors that handled the data? Were there several different ones? Did you have a mask process with all the 360s that handled everything and slew it out from there?

Phillips: We... Well it was the 7010. We ran the same processes that they ran in Zweibruecken so it was all done... Initially it was all done on the 7010 and it was fed out to [redacted]

Johnson: Okay.

Phillips: It fed out the [redacted] something.

Johnson: Okay.

Phillips: Now we eventually developed... there were a whole set of things... There was a whole set of processes developed for the [redacted] and we developed some new processes for the [redacted] problem. Those were certainly were two main things that we worked. There was the [redacted] problem. The flights...

Johnson: ... but the 7010 was your big... your centralized processor?

Phillips: Yeah. We fairly quickly replaced that. By the way, as we made these changes, with 360s. We had 360s. We had the first of the lower end of the 360s and by 1967 we had bigger 360s and the 360s would emulate the 7010s so we were able to move things in a true emulation mode so we were also rewriting at the same time to write them into the code.

Johnson: I assume you were... The 7010 and the 360 were basically batch processors in which you took tapes over the desk, log them in, put them on the 360 and prioritize the order... ..

Phillips: Yeah and in fact batch processing remained the primary thing except when we did introduce the scope interaction but I don't know... It was kind of batch processed because we ran the (C% GENIAD) which produced

the error list. The operator sat down and signed on and the error list scrolled and they corrected it so it was batch on-line process or whatever you want to call that.

Johnson: That would be the action in-between the DLT-5 and the 4010 was that the DLT-5 would produce magnetic tape?

Phillips: Right.

Johnson: And you need to load down the 1410?

Phillips: Right.

Johnson: ... and the 1410, the output would be another mag tape?

Phillips: Right.

Johnson: That you could put on the 7010...

Phillips: Right. So all of that was pretty working when I went off to [redacted] except the AG-22 part. [redacted] who was working for me at that time, was making very good strides at getting the AG-22 working. He and some of the people who were working it, wrote the IATS software and then they were writing a set of 360 processes to take the material in and break it down. We had people from A and B (Groups) who came. We had a Task Force. In fact that's one of the things that... I had suggested to a couple of people and said, "We routinely put together task groups to do things." People would move people around and I don't know. It doesn't seem to happen as much anymore and I don't know whether people are so unwilling to let their people go and do useful things or what. It's kind of shocking in a way because... You go to somebody and say, "Can I borrow a couple of guys to work on your problem? They'll come and work with us." They'd do that. Send them down for six months or a year. It made all the difference in the world because you integrated the people who could do programming with some people who knew TA and had done a little programming and who understood what you were trying to do with a program

Johnson: Was that because it had become too bureaucratic? too...

Phillips: I think they have.

Johnson: If something was coming in from the Far East. How could... That wasn't coming in, you know, on the DLT-5.

Phillips: No, it was not. In fact... In the bulk of my period there which was '69 and '70, the stuff that was from the Far East was all being pre-processed at JSPC and we were running secondary processors. We were getting... That's not true of the stuff from Vietnam. It was (C% TEACH) which was the basic TECSUM from Vietnam. It was coming in directly to us. We were capturing that. We developed a machine system called MUSSER... Sorry, the first one was called MESHER. MESHER was a machine that would capture 16 teletype signals and interlace them on a tape so that every other... every data frame was two frames. One for the frame that told you which machine it came from and the other was the frame with the

data. Sort of an asynchronous mode recorders.

Johnson: Did you copy them down in the Comm Center or down in C-5?

Phillips: No, down in C-5. down in C-7 in fact. They were C-7 racks. You then took the MESHER tapes and we put it on the 7094 and split it out to the 16 separate tracks.

Johnson: So MESHER, basically, took your paper tapes...

Phillips: It got rid of the paper tapes.

Johnson: Well, it took the paper tape and created a mag tape?

Phillips: Well it too, from our case... From C's point of view, It took a signal which was equivalent to the paper tape and made the mag tape. Now we had some fights with the old T which was in the Telecom. They'd say... we'd say, "Things are missing." or the analyst would say, "Things are missing." and T would say, "Well, it must be MESHER that lost it." and Dick Day, who later became my deputy in T4 actually set up 32... 16 machines, I guess, and copied everything on 16 machines upstairs in the Comm Center. Exactly what was going to us and had people sit there and compare and then he found that it was being lost in the Comm Center. They had an overflow thing which they called... Can't remember the name of it but anyhow... They had enough capture in the Comm Center for a certain number of active circuits but when they got too many active circuits, it would send it off to a bypass or an overflow thing. But the overflow thing was incapable of handling it when there was a lot of overflow and that's where they were losing the messages. They would just drop a whole message entirely. We went from the MESHER to a machine that would handle 64 channels and in fact that remained the primary mode of... that, eventually, replaced the DLT-5 because it could take a higher data rate signal. It didn't have to be a 75 baud signal.

Baker: How many bauds... Do you remember at how many bauds the DLT-5 operated ?

Phillips: It operated, I think it operated basically at... 2400 baud. It was pretty low.

Johnson: I thought probably that would be the speed. I couldn't see that they would have a 9600 baud machine.

Phillips: No. No, we did not at all. In fact, it had the ability to operate at half speed and I think we operated it at that all the time. We had a lot of trouble. A lot of circuit trouble. AT&T would change the circuit routing or something and the lines weren't conditioned and we would lose it. We set up a procedure... At one point, I set this up because it seemed to be the only thing... [redacted] We set up a procedure that if the circuit was down in [redacted] at 11 o'clock in the morning, European time, they would make a tape and they could have it out in the airport and have it in the hands of the Captain by one (o'clock) and we could have it here six hours later. We picked it up at Friendship, I guess. It was almost as fast as transmitting it electrically. There was one

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summer that we ran that almost solidly because of failure on the circuits.

Johnson: Uh huh. Let me change tapes... [Short silence].

Baker: We can begin another time.

Phillips: Yeah. Yeah. How about... [TRNOTE: Conversation ends abruptly]

[End of Tape 2, Side 2]

[Tape 3, Side 1]

Baker: Okay. We'll continue on here..., that field day is the 14th of July...

Johnson: That's very clever of you.

Baker: I will not try to sing the Marseilles. I don't know the words. I've got this huge cold but I'll losing...

Johnson: I'd like to throw in an observation and see what you think about that. It appeared to me that much of the interest from the Army's centralization in Europe had to do with the drive to do language processing in [redacted] Apparently they had some linguists there and a lot of the stuff was shipped into [redacted] or a theater processing effort but they weren't thinking yet about bringing things in... A lot of stuff, you know.

Phillips: I don't know that I would agree necessarily that... One of the things that they tried to do, they tried to manage collection by having things forwarded in and feedback. They would feedback callsigns and frequencies to the sites and so forth. I think we can find somebody..., I'll have to rack my brain a little. I think we can find somebody who can describe this Army processing in the 50's.

Johnson: That really is the central... because we need to counterbalance... I have such a thorough handle on what the Air Force was doing and very little on what the Army was doing.

Phillips: In fact, one of the people who is still active is a fellow named [redacted] He's in W. On the W Staff, I believe he's an (1G). He would know quite a bit about it. Another one who might know something is Tom Elliott but he's out in [redacted] now. I'm not sure Tom... Tom might have been more associated with the Far East during that period.

Baker: Is there and "I" in [redacted]?

Phillips: No. It's just [redacted]

Johnson: I've seen the name.

Phillips: I can come up with some other names, I think but you're absolutely right. It was a different approach from what the Air Force did. When the Air Force... As far as I'm concerned, the Air Force invented the OPSCOM and in the process they invented the idea of the BULLMOOSE report which became the KLIEGLIGHT report and they had a very gung-ho group, I thought, at Zweibruecken who were in charge... In fact, I'm trying to remember the Lt. Col's. name who was the Ops Officer down there a

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couple of times... Was it (B% [redacted] ?)

Johnson: I can't remember.

Phillips: I can't remember but anyhow, he ended up working for one of the companies down here in College Park. I'll find his name somewhere.

Johnson: One of the guys who was important in that when I was over in Europe was the processing officer. A guy by the name of [redacted] Did you ever run into him?

Phillips: Don't remember the name. Probably did because I probably went out there and talked to him at some point.

Johnson: We're already in 1964 so their development is... That's way, way along at that point and I don't know who came afterward.

Phillips: They had, under 466L which was a big Air Force budget initiative, they [redacted] and in fact a fellow named [redacted] who is still in the area, was one of the principals out there and then they had two or three other people. A guy named [redacted] who probably knew more about [redacted] than anybody I've ever seen. He knew all about the processing but he knew how it was analyzed and everything else. There were four or five of these [redacted] developed that set of processes that they ran on the 1410 and those are the people that they loaned to me as the Chief of C5 to redevelop the processes here. They paid their salaries for two or three years and finally I got some money to pay their salaries. Some of those people... A guy named [redacted] was probably one of the key people in doing the AG-22. That was a brilliant program with the 1401. (Xm/fades out].

Johnson: Were you still working [redacted]

Phillips: Yes. Still working with [redacted]

Johnson: Well that's a key element, I would think.

Phillips: It is a very key element and I'm not sure exactly why they decided to loan those people because, in a sense, I almost look at the return of that processing as a conspiracy between Walt Deeley and the people at the Pentagon to close down Zweibruecken. I think Kirby wanted it closed down too. I think there was a sense that it was getting too far out of hand. I don't know whether... I wasn't at the right political level so I don't know whether that was really true or not but the Air Force had plans to put a 1401 at every field station.

Johnson: Yep.

Phillips: ... and then they were going to have something like the 1410 at the processing centers to process some of the [redacted] kinds of stuff at Zweibruecken and they were going to forward the stuff in to the processing centers. Kirby was kind of down on that because... Part of his problem may have been that the Army, also, immediately jumped on the band

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wagon and said, "We've got to have a 1401 for each of our stations." and so the budget began to show up with it, or the draft budget began to show up with it with each of these sites having a 1401.

Johnson: At some point, somebody is going to realize you're going to have three Services all doing this and you have to centralize it someplace.

Peterson: Well you're working a centralization process to a certain extent or at least bringing it to slowing it down but (1M/twk/fades out)

Phillips: Yeah. Right. You are and... There had been very little centralization in processing because the comms didn't support it. It was in fact the earliest...

Peterson: Our own comms?

Phillips: Our own comms. Yes. The earliest use of the OPSCOMM from Europe back here was shaky.

Peterson: Yeah.

Phillips: They put in a... They leased a circuit to... which was something... The circuit [redacted] costs $240,000 a year of 1964 money.

Peterson: Real money. [laughs]

Phillips: Real money! They were running a bunch of 75 baud OPSCOMMs and the DLT-5 circuit in that.

Baker: Well this is something I think that many today doesn't realize. Doesn't understand without hearing this that, in fact, communications were not all that great... Somebody who has hollered down the lines at Camp Taegu, Seoul, or try to talk like he was based from Saigon, he knows these things but our generation is seeing it as pretty cleaned up. You got to understand that this packet switching and all the things they do today... ..

Phillips: That's right. You'd buy... In the first place, the crypto would get out of sync a lot. That was one of the problems that you had so that you might start out with what was to be a fairly good circuit and you'd lose crypto sync. You had to restart it and all of those things. You didn't have error correcting codes. They were just not common place.

Baker: So you're talking about an evolution. An evolution of the computer and software, the Services is really a key element.

Phillips: Oh absolutely. No question about it. Now the things... The first OPSCOMM circuits would work better in Europe than they did from Europe back here. It was a longer haul. In fact, as I think I mentioned earlier on the tape, when I first came back from ICAF in August of '65, the first thing that Levenson put me on was trying to find out - trouble shooting to see what was wrong. something happened every night.

Baker: Yeah. I don't think you'd studied that at ICAF. Industrial College of the Armed Forces?

Phillips: Yeah. Industrial College of the Armed Forces. Right. I was there from

June '64 to August of... Sorry August of '64 to June of '65, I guess it was.

Baker: (Xm/too weak]

Phillips: Yeah. So there was a great deal of problems with the comms and with the processing system to make that work. It had worked clearly better at Zweibruecken because they had a smaller set of people who knew and were more interested in the thing. We brought it back here and mixed it in with the big systems and one of the things that we finally did after I became Chief of C-5 was that we created a so-called Field Processing Element in C-7 and an Army Captain named [redacted] ran that. We put all of the people... had a number of military people on it and a number of civilians and they ran it like a four-section or a five-section watch, whatever you want to call it 24 hours a day and we never shut the machines off. As far as I know, they're still running ever since. It began to run a lot better when we did that.

Johnson: You mentioned the $240,000 circuits that have all these OPSCOMMs and the DLT-5. Now originally, that was a HF circuit.

Phillips: No, I don't think it was. I think it was cable.

Johnson: Cables. Okay.

Phillips: Yeah, I think it had to be cables because of the crypto-sync. It's pretty hard to maintain crypto-sync anytime at all on HF. Especially with that kind of thing because we didn't have the devices that resync themselves like they do now. The devices... The crypto devices will resync.

Johnson: When was it that we went to satellites? Mid-60's?

Phillips: I don't have any idea when... Well, no... We didn't go to satellite until PLATFORM came into being, I don't believe, because I don't think we had the... We didn't have the capability... I may be wrong. The DLT-5 did have an error correction and an acknowledgment thing. I just don't think that I know the answer to that. Maybe you can find somebody else.

Johnson: We really need to get Dick Day in here to find out some of the communications relationships.

Phillips: He can tell you an enormous amount about the comms themselves. He has a very biased view of computers. He doesn't believe... Didn't never really believe in computers.

Peterson: My kind of people.

Phillips: He tried to build a message switch which was all hard components, you know. No software kind of thing.

Baker: Well, he's not doing it.

Phillips: No, he's not.

Johnson: He must have run up against people like [redacted] because we...

Phillips: He did. Yeah.

Johnson: ... in the lead in trying to get computers as part of the communications terminals.

Phillips: Well he was running up against, also, people like me. But [redacted] who was a protégé of Dick Day's then, and this is really true... That if Dick washed up on a desert island, the first thing that he would do is build a communications system. He knew... He'd worked in Europe as a maintenance man servicing telegraph circuits for all of the European area. I don't know who he was working for. Whether he was working for RCA or whatever it was but when we hired him... So he knew everything there was to know about how to get and move data around Europe. He was in the forefront of communications technology for the longest time and I think it was things like packet switching and so forth that really did him in because he did... He thoroughly disliked computers. He just didn't believe that they would do anything for anybody.

Baker: There's probably a lot of reliability questions about computers. In the early days of computers you hear there were down so many times. "Can't do anything, the computer's down." After a while, you get frustrated.

Phillips: But going back to that. it is absolutely true that there was an evolution of communications, and software and then these ideas that, as far as I'm concerned, started at Zweibruecken. I've never heard anybody else talk about it before and... .

Johnson: There's one possible story that I will probably never find out because the people who would know or could confirm that are dead but... The story was that the BULLMOOSE actually started with the invention of the OPSCOMM shunt device and the capability to put three-letter flags in there that would cause interesting things to happen to a message when it got to the switch.

Phillips: Well that certainly was a part of it because, in fact, that was the thing that allowed them to divert the data to the computer. You could have the OPSCOMM and the OPSCOMM was intended for people at a keyboard. I'm talking to you and you're an analyst out at... or a collection operator. The shunt group allowed you to develop... to turn the [redacted] in to the computer and so it was a very important part. It was a very important part of the whole development of NSOC and the time processing depended totally on that. They used the shunt groups and tried to turn messages around and began with a thing that they called... I can't think of the name of it. [redacted]

Johnson: I was told that an Air Force Master Sergeant invented that. Physically put together the shunt, the shunt box at Zweibruecken. Wish I had his name...

Phillips: I don't believe that's true but I have no reason for saying that. I thought it was a function of the teletype itself...

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Johnson: Could very well be...

Phillips: ... He may have been the one who first said, "Why don't we use that because that's in there." That could very well be.

Johnson: Yeah. maybe he gave it to the idea to the Teletype Corporation?

Phillips: Yeah, Dick Day would know the answer to that.

Johnson: Yeah, he was an old keypuncher. Get him in to just talk. Anyway, I was trying to think if there were any follow-up questions on your C-5... Your C-5 days. Is there anything else that needs to be covered.

Phillips: I don't know if there is anything. As I told you, there's an enormous number of those programs still running. I give a lot of credit to people like [redacted] and to people like [redacted] who's now Deputy Head of J something or other and [redacted] who was my deputy who would go out and beg, borrow, and steal people. What we did in the C-5 days, which was a method that I've always used. I didn't care whether anybody was assigned to me or not. If I could get them to work for me, I figured that motivation was the whole thing and not anything else mattered. We had, in C-5, at one point, we had 35 or 40 people loaned in and they were doing some great work. They were working on support Southeast Asia and working on A Group problems and so forth. A lot of them were T-1 people who were... It was easier to get along with them but... As I told you, C-5 went from just about 150 people to 300 people in four or five years. Then, when I went off to Germany to be head of [redacted] it was taken over by a guy by the name of Frank Smith who was a sort of contemporary of mine. Fairly soon after, Deeley and some others began to go up with the idea of dismantling C-5 because, I suppose, to some extent we had been... maybe we were independent and we'd been difficult for Deeley because he couldn't totally dominate us the way he wanted to.

Baker: What was his position at the time?

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Phillips: I don't know exactly. I guess he was... ..

Baker: ... in A7 or something.

Phillips: No, he was never that high. He was... He had put together the thing he called Plan B which was for dismantling Zweibruecken and bringing it all back here. He created the plan and it was in support of Kirby and some others, I guess.

Johnson: He may have, at the time, very well have been still Chief of A8.

Phillips: I don't think he was even that high at the time.

Johnson: It all depends on... When I came... Yeah, that's right. Probably... Actually he was a Deputy to [redacted] in A8 when I came in in '71. So yeah, he worked there.

Phillips: This never stopped him. His position never mattered very much, I don't think.

Johnson: When I came to the Agency and came to A8, I was told that it didn't matter what anybody else said, Walt Deeley was running A Group and don't pay any attention to anybody but him.

Phillips: Funny, he never got the job of Chief of A.

Baker: The time frame here in the report? Was it the late 60's when you were [redacted]

Phillips: [redacted] in July of '70. So I left the C-5 job in... I was released from the C-5 job at the end of April.

Baker: So you never really got wrapped up in the Vietnam thing at all?

Phillips: No. No. I had an element in C-5 that supported the Vietnam effort and we did an enormous amount of processing and, until this day, I don't know how much use it really was. I know that two of the people who worked for me went out there. A guy named [redacted] who you might have run across at some point: Army. He'd been an Army Warrant. He went out there an, in fact, ended up doing a tour out there. A year tour. He's dead now and a guy named [redacted] who worked for me who was extremely clever at doing things for traffic analytic problems.

Johnson: Do you have any interesting stories about how you wound up taking on the Southeast Asia decryption job?

Phillips: Well that was really [redacted] who did that. It wasn't me. I mean that was... [redacted] had been working with the RYE. What they called the RYE complex.

Johnson: Oh, okay. That was the 494.

Phillips: Yeah, the 494. He and the woman named Carolyn Palmer who was a very brilliant programmer. In fact developed most of the operating systems for the 494, it was a homegrown operating system. They began to develop these process which they called AUTOLINE.

Johnson: uh huh.

Phillips: In fact, they did almost all of that on their own and sort of running sort of roughshod over the people who ran RYE and it may have been that they needed to do that. Maybe the people who were running RYE were too (B% surly). I didn't... RYE was not in my bailiwick. A guy named Bob... I can't remember his last name now, was running RYE. But they were running roughshod over him but they began to develop the processes. Now, I had written a short paper talking about the ability to turn material around and send it back. [redacted] came to me one morning and said, "I know how to do that but the devices I need are up in DEFSMAC." and he said, "They're not using them." and he said, "Can you help me get them?" and so I called whoever it was in DEFSMAC and...

Baker: Charlie Tevis maybe?

Phillips: No it wasn't Charlie Tevis. In fact, I was trying to remember who it was

now. But at any rate...

Baker: Jack...

Phillips: No, it was lower. Somebody down at the working level. They said, "Well, you can borrow them but we won't give them to you." They had them, according to [redacted] they had them for four - five years and I think they were these shunt boxes. So they loaned them, on my request, to him. He wasn't working for me and in no time at all they had implemented the process of turning things around automatically. They were doing it all on the 494 because the circuits were wired directly into the 494. They were doing it off the OPSCOMM circuits. The stunt group would divert it to the 494. They would process it and feed it back on the line and they could interrupt the circuits going back out. I think that was the key thing that he wanted.

Johnson: All they'd do was flags and tags.

Phillips: Flags and tags. Yeah. I was quite... I think it was the most remarkable development of that era. Unfortunately [redacted] had rubbed everybody the wrong way. Again, he was a sort of Deeley type. He'd run roughshod over people and, in fact, he would do some character assassinations if he thought you were in his way, which Deeley wasn't above. The net effect was that, what he was doing which was quite brilliant just didn't dovetail very well with what other people were doing. There was a lot of mutual antagonism. People would do everything they could to block what he was doing and he was doing everything he could to block what they were doing so it didn't grow as fast as it might have. But it did grow and, of course, they added more 494 processors and it became TIDE. Curiously, [redacted] became my charge, I guess for two months before [redacted] so we got along fairly well and, we had some run-ins but we got along pretty well for the two months. Apparently there was a lot of friction after I left.

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Johnson: I heard ripples of that when I came into the Agency. Was there any disputes, in your days in C-5, over who really owned programmers and whether they escaped to A Group and things like that?

Phillips: It was beginning to emerge and there were a lot of programmers who had, for the most part, who had been analysts who had trained and the question... The argument had to do with how much privilege they had as programmers outside of the main organization. The guy we talked about the other day, Fred Ruffing, who had invented SOAPFLAKES, was in fact a linguist, a Russian linguist, a plaintext processor. He took up 704 programming and was a fantastic programmer. Now he had a coterie of people including [redacted] who worked for him and who were doing the same thing and now they were getting to tread on the toes of the people in the central organizations, C-7 and C-5. That was going on all over the place but the actual programmers, who had been hired as programmers, very few of them had actually been dispatched to work in

the analytic elements until this...

Baker: Well they probably couldn't communicate.

Phillips: Well they couldn't and, in fact, that was the problem but in point of fact, I tried very hard, ten years earlier to get someone to do that. When I was working with Juanita, we had five people that we sent to work in the old C organization to learn programming. One of these was a guy named Bill Garrett. I don't know if you know Bill Garrett or not but there were a number of these people and they made significant contributions but then I countered by saying, "Well why don't you send some real programmers up here and we'll each them how to be analysts?" Analysis is such a black art that the programmers wanted no part of it. You could bring them up and they'd stay for two-three days and they'd go right back.

Baker: They should have briefed the (B% programmers)?

Phillips: It is but the analysts hadn't... A lot of analysts had gone to become programmers because it was challenging and interesting.

Baker: Well they were looking for a better way to analyze traffic.

Phillips: I suppose. Yeah.

Johnson: I still think that most of the best programmers were former analysts.

Phillips: Yes. There's no question in my mind. In fact, virtually all of the good work were these people now. There were exceptions like this Bernie Rackmiles [redacted] who just... He had mastered what [redacted] was about.

Johnson: Didn't he have a SIGINT background?

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Phillips: No, he didn't have a SIGINT background.

Johnson: That was unusual.

Phillips: But anyhow, somewhere about,... in '71, they dismantled C-5.

Baker: But that exception may not be that great of an exception. [redacted] has broader applications through the whole world not for just a short term.

Phillips: One of the things that happened and this is certainly true. The people who had really good field experience had a tremendous advantage. I mean, [redacted] had worked in the field. He worked at JSPC. They were close. [redacted] had worked at Zweibruecken and came back to work for me. They sat there and worked with analysts, you know, worked side-by-side. With separate organizations, you have a little bureaucracy and, in fact, in that society things worked much more closely that they do now. With those last reorganizations of R and T, I think there must be quite an ocean between them.

Johnson: Well how did you [redacted]

Phillips: Well that was an interesting thing... I got a phone call from Buffham who was... [redacted]

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about processing format. I guess that I was known as the, sort of, pseudo expert on formats because I had a SIGINT background as an analyst plus a processing background. I got a phone call from Buffham on Friday and he said, "How'd you like to [redacted]

Baker: Was he a Deputy Director?

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Phillips: No, I believe that he was Deputy, DDO.

Baker: Oh, okay. With Kirby.

Phillips: Kirby? No. I think there was a military guy who was probably Chief. Gosh, I don't know who it was but it wasn't Kirby.

Johnson: Was it while [redacted] was there. [redacted] was there in the 60's. It was probably in the 60's.

Phillips: I don't know and it wasn't John Morrison. He came a little later because [redacted]

Johnson: Wait a minute. It could have been Morrison because he was there during... .in '69 for the EC-121 crash. He was there for the creation of NSOC.

Phillips: I think it was Morrison. Buffham was the Deputy to Morrison but Buffham said, "Would you like to go to [redacted] and I said, "I think so." I said, "I'll call you on Monday." Wanted to talk it over with my wife and I went home and there wasn't any question. That was in... gosh I don't know... In the Fall I guess... Several months... many months had passed.

Johnson: Why do you thing they selected somebody with your background.

Phillips: I think that Buffham thought there was a need to do some automated - [redacted]

Johnson: To move data faster?

Phillips: To move data faster and better and so forth. So this just drifted on and on and Gaylor became the Director. Gaylor, I guess, was notorious for believing that nobody needed a long-term notice or whatever they were calling it. In fact, I heard him, on this subject, that he moved to be an Assistant Naval Attaché overnight or something. I don't know. What happened was that Tordella's candidate for [redacted] was John Monroe. I don't know whether you know him.

Johnson: Oh yeah. I know him. Yeah.

Phillips: He is now deceased. So there were two jobs open. They were about equal. One was the Deputy, SUSLO at London at Gheltenham and the [redacted] Tordella thought that I ought to go the, if anything,... I mean, I think Tordella didn't really think that I should go anywhere. I think he said, and I think that he was probably right that, I was better employed here somewhere in the NSOC job. But, at any rate, he thought that, if there was any choice that Monroe ought to [redacted] and I ought to go to

Cheltenham. That dragged on for months. Three or four months, I guess. In fact, at one point I went to Bonanni who was the DDA and said, "Lou, tell me what is going to happen here. I tired of this ping-pong stuff. Uncertain basis. What's going to happen." and Bonanni calls me back and says, "That's settled. Monroe's going [redacted] I called Buffham and he says, "The hell he is." So Buffham won. I went [redacted] and Monroe went to Cheltenham. It was a fairly good tour. Three years although I think, in some respects, that Tordella was right. that it wasn't very challenging.

Johnson: I remember you said, on the last tape, that you didn't have any high regard [redacted] anyway.

Phillips: [redacted]

Baker: [redacted]

Phillips: [redacted]

Johnson: That means that they have to go 24 hours a day.

Phillips: That's right and they didn't believe in the kind of processing that we did. As we said once, in a discussion [redacted]

Johnson: [redacted]

Phillips: But I think there was a lot of groundwork playing later on that, hell, eventually when I was Chief of C-03,... No, I guess, the Chief of T4, they came and [redacted] The problem for them was

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Baker:

Phillips: There's no way I can check. We dealt a great deal with the military agencies and made far better headway and, in fact...

Baker:

Phillips: Yeah, something like that I guess. For instance, one of the...

Baker: About as effective?... [Laughs]

Phillips:

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Baker: ... right on the border.

Phillips: Right on the border and so forth. We immediately set up meetings with the Air force and began the discussions with He had been the Commander at the time.

Johnson: At Hof?

Phillips: At Hof, yeah. He may have been an interim Commander for the closing. I don't know but we transferred... We... The Air Force transferred that to the Germans and saved a million bucks. They were taught to dismantle and drag this junk out of there.

Peterson: That's a big savings.

Phillips: Saved us a million bucks.

Johnson: Interesting.

Phillips:

Baker: So it was a competitive... ...?

Phillips: Oh, it was very competitive and, in fact, what seemed to work best and I could sense this. When I'd take military people to go and visit the military,

they had a great camaraderie. I mean, an Army Colonel and a [redacted] would get along just great. The same thing was true of the U. S. Air Force. Quite often, I would arrange the meetings and go and just sort of back off and let them carry on. I'd be the [redacted] head there but they would do all the talking and so forth. I think that it worked pretty well, as a matter of a fact.

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[redacted]

Baker: [redacted]

Phillips: [redacted]

Baker: Sounds like a curious case of just beat the (1-2M/fades out]

Phillips: [redacted]

Johnson:

Phillips:

Johnson: Was [redacted] still active when you were there or had he retired?

Phillips: He was still active when I first went over there. Yeah.

Baker: [redacted]

Phillips:

Johnson:

Phillips:

Johnson:

Phillips:

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[TRNOTE: Silence here. Evidently trying to think of the name.]

Johnson: That's neither here nor there. I had never been to the

Phillips:

Johnson:

Phillips:

Johnson: How far away from you was that?

Phillips:

Johnson:

Phillips:

Johnson:

Phillips:

Johnson:

Phillips:

[redacted] was the American. OGA

Johnson: [redacted]

Phillips: [redacted]

Baker: I'm going to have to change tapes here. Do you guys want to break for lunch while we're here.

Johnson: Oh, it is twelve.

Phillips: Whatever you think, I guess.

Johnson: Why don't we take the time [to break].

[End of Tape 3, Side 1]

[Tape 3, Side 2]

Baker: [Interview commences] That static that we got from this one earlier is probably just because, probably, it had some dust. [TRNOTE: Clarity of the recording appears to be greatly improved from this point on.]

Phillips: We're back in operation, right?

Johnson:

Phillips:

Baker: Please forgive if in about 10 minutes I stop and check it out again.

Johnson: We can go on and backfill but my idea is, since we just went over this material and I know which questions and which were the right responses, why don't I just ask them?

Phillips: Okay, fine.

Baker: So we're going to get into a Reader's Digest condensed version.

Johnson: That's right. You're going to get a condensed version of the previous hour.

Phillips:

OGA

Johnson:

Phillips:

Baker:

Phillips:

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Johnson:

Phillips:

Johnson:

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OGA

Peterson:

Phillips:

Peterson:

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Phillips:

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Jenks) waiting to get in.

Johnson: What positions did they have at the time?

Phillips:

Baker:

Phillips:

Baker:

Phillips:

Johnson:

Phillips:

Baker:

Phillips:

Baker: Forgive me but I want to break here. (Short break) Shall we pick up where I came back to.

Johnson: I had a question about whether you had been given any language (training) before you went over?

Phillips: I said that I only got about 90 days notice when they finally made the decision so my wife and I had a little bit of instruction but we were clearly in a frantic mode trying to pack up our house and so forth so it didn't sink

in terribly well. I'd had a year of German in college but I was pretty stale. My comment was that the Air Force did the best job. They picked people a year in advance and sent them to German school and that was what Mr. Zaslow told me that he was going to do for all the future people but that never happened.

Baker:

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Phillips: In fact, the best people who were the people who came out of the old

Johnson: Another question that I wanted to ask was whether you had started any discussions before you left abou

Phillips: I think that was going on. I just... I'm having a little trouble remembering because I did go back about eight months later and they were there. I think the discussions were on going.

Baker: It would be much later. Sometime in '74, I guess.

Phillips: It would be sometime in '74 and I think they... I don't believe that they had actually moved in, in '73. I'm almost certain of that but I think that six or eight months later they had moved in.

Baker:

Phillips:

Baker:

Phillips:

Baker: But they couldn't cover the cost of such a project... ..

Phillips: The cost was just prohibitive, I think...

Baker: Yeah...

Phillips: It got to be around 25 or 30 million a project. I guess the technology... I

don't know what had happened. I guess the technology had become so advanced so that the cost escalation was much higher and much faster that the cost of living.

Johnson: Trying to think if there were any more questions... Most of the other ones that I asked were negative anyways so we kind of hit the ones that were really profitable. Can you remember any other, Charlie, that were mostly

Baker:

Phillips:

Johnson: Okay.

Baker: They say that they have to deal with [fades out] [Laughs]

Phillips: Yeah.

Johnson: Well you just. Second time through...

Phillips: Well we didn't... We talked a great deal about PLATFORM...

Johnson: We need to start back here. Your return to C03.

Phillips: Yeah. What I said earlier was that Arthur Levenson, for whom I worked before and liked very much and he said would I like to come back and be Chief, C03. I said, "Yes." It wasn't a very exciting job. It certainly wasn't a step up from where I left but I knew that too many people came back and got no job at all so I took it. It turned out to be pretty interesting because it was the job of planning all of the central computer acquisitions. I had about 20 people working for me and we ordered most of the major hardware. The thing that really made it interesting was, I guess after I'd been in the job a few months Levenson left and (B% Speierman)... Levenson retired and Speierman took over as Chief of C. There was this... Some pressure to do something about networking. There had been a project to do networking. To build a ring and to design and build all the protocols and do everything in-house but a young man named Steve Walker, who had been in R& D had been agitating that we ought to use the ARPA technology, which was packet switch technology which had been financed by ARPA [TRNOTE: He stops and says "DARPA". Believe that "ARPA" is the correct abbreviation) and it had been developed by Bolt Beranek and Newman out of Boston. They developed a network that was functioning among universities and a few scientific centers, Defense Scientific Centers, and it had gone overseas to Norway. There was some kind of research facility there. By pressure, probably from Deeley, in a report that I'd said, that had put together which showed that if you had 50 computers that the way we

were going, we were going to connect each one with every other one. We were going to have a total maze of interconnections. That we needed to develop some sort of networking strategy. Speierman asked me to convene some sort of seminar to discuss this with some people from the outside. He gave me some names of people and we got two people from Bell Labs - [redacted] and a guy named [redacted] and a guy from the West Coast who had developed... I guess he was one of the original developers of the packet switching technology. His name was... I can't remember what his name was. At any rate they came and we had about a four day session with them. The people who were principals of the session were me and Speierman and Marlin Wagner who was representing R and Bill Cherry who was representing software. We decided, on their recommendation, to adopt the ARPANET technology because we could move... We thought we could move it over intact with very little development. It turned out that a lot of the software was developed at universities and was undocumented and we wanted to do things different from what they did because we wanted to have a good file transfer protocol and they had been mostly interested in interactive things. It turned out to be a very good decision. What happened, I said... I became the... kind of a Godfather because I fought off all these efforts of these people to develop alternative approaches. People would come to me and say, "PLATFORM is never going to get done but I've got a better idea." I'd say, "No, no. We're going to make it." By fighting off these counter-efforts and finally forcing... What I think I did was force the connection between the 494 and the 370. That was their biggest single connection. Forcing that to work, I got the thing into fully operational mode because that had to be operational. Everything else was kind of, you know, software weenies doing this thing and that thing and it was interesting and fun but it didn't really involve...

Peterson: The word "peripheral" jumps to mind.

Phillips: Yeah, that's right. By forcing in to this operational mode on those two processors, I got people to make it fly in the sense of getting enough commitment to it to make it work. That was probably one of the most interesting and challenging things and one that has been just fantastic in all the years that I've been hanging around here since I retired because I worked on project after project and you walk in and... .

Peterson: PLATFORM sits there... ..

Phillips: PLATFORM sits there... They say, "Well we can't do anything until we get our PLATFORM connection." Or "When are we ever going to get out PLATFORM?"

Baker: Well, was it ever called PLATFORM?

Phillips: Yeah.

Baker: Was it that from the start?

Phillips: Yeah. Well, no... .

Baker: Well, people had turned that around for almost a generation...

Phillips: The first thing they called it, for a few weeks or something was MASTERPLAN which was... wasn't very good. Then somebody came up with the term PLATFORM and it caught on immediately.

Baker: Yeah. Like you say, it's used to cover a world of sins and shortfalls and capabilities...

Phillips: It's interesting because our first efforts were to... We were going to connect four processors. They were going to be the first ones and most of those never did get connected. We were going to connect... They had a system called OMNIBUS which was in DEFSMAC. Not DEFSMAC but NSOC... That was one of the ones we were going to connect. We never got that one connected for years and years and years. We were going to connect the PDP-11s that were part of SILKWORTH. That were up in the SILKWORTH control center up on the 3rd floor and Ford says they want 17 million dollars to do connection software. So everybody said, "Well, gee. We'll just put a tape drive up there and remote a tape drive and we'll take the tape drive off the PDP-11 and put it on the things upstairs." [redacted] was going to be on it. Again, RCA said, "Gee. Several million dollars." In fact, [redacted] eventually was on platform with a terribly clumsy connection that was about as good as paper tape. I mean, it wasn't a wire connection but... The hosts on PLATFORM had to hold [redacted] and pull the data across or something. It was an unsophisticated connection.

Baker: Do they still use that...

Phillips: What?

Baker: [redacted] That became a GROF, didn't it.

Phillips: That became a GROF and an AROF. Yeah there were two Groups in there. I've forgotten what the fourth one was. In the meantime, we began to get other processors up on the thing. There was a processing system [redacted] that was on it. A signal processor that was, I guess, looking for one of the Navy signals or something.

Baker: Printer? Was it doing printer or... .?

Phillips: No. I can't remember the name of it but it was... Anyhow, we got a number of things like that when (2-3M/Fades out). That was the principal thing I did from '73 to '77 but, as I did mention this morning, I spent... I offered to spend a day with every Division in DDO to help them understand what we were doing in the computer world and to get their requirements in the future and, as I said, that went well in some cases and terrible in others. Sometimes you'd meet all day with the people and you just got a lot of B.S. and sometimes you'd meet with people who were well organized and knew what they wanted and they'd bring in the individual branch chiefs and so forth to talk and it went well and it helped the planning. That was...

I think that was only done once. I think it was tried later on by somebody else but it didn't work as well because...

Peterson: I think that every time you get a chain and a cast of characters, that would change the quality of the...

Phillips: Well I think that... as a matter of fact, If I remember right... I don't know if either of you knew a Dottie (B% Bloom / Blum) who later on worked for me. She tried it but Dottie was antagonistic. It was important to simply draw the people out and listen. Not to try and challenge them about why they weren't doing it better or something.

Johnson: A little bit like [redacted] would... ..

Phillips: I always said that [redacted] got far better support from the computer people than he deserved because he was always criticizing us. He was lucky to have gotten anything.

Johnson: Well, he played no favorites. He was criticizing the Ops people, too.

Phillips: Yeah. He was. That was just his style. Then PLATFORM became operational. We declared it operational in September of '77. I believe that's right. But anyhow, T-4 was created out of the old C-03 and the telecommunications organizations in May of 77 and I became Chief of T-4 which was a Group of about 175 people of whom about a third was communications people and the other two-thirds were (1-2 Blkd by below).

Baker: So you were the head of the Comm Center and all that in T-4?

Phillips: No. No. These were the people who did the planning for comms and the engineering. Comms engineering and they were the project people. No, the operations... I never really had any involvement with operating the Comm Center.

Baker: Those are T-1 people, I think.

Phillips: That was T-1. Yep... Are the operating computers and that was one of the things in my good... "God those people can be stubborn." I mean the people who run day to day operations. Of course you have to be understanding about why. They've got lots of work to do and they're not interested in these hare-brained schemes that people like me would come along and...

Baker: You never had to run the train, huh?

Phillips: Exactly. I'd tell them how to run the train but I never got to run the train.

Baker: Planned the route but didn't get to run it?

Phillips: Yeah.

Johnson: I want to back up just a second back into PLATFORM. Did you say it ran on a Honeywell 316?

Phillips: There was something called an Interface Message Processor which BBN had developed which was a Honeywell 316.

Johnson: Did you say that the Agency did about 90% of the actual program for the interface software?

Phillips: For the interface on the host side. Say if you put a 316... I mean all the... There was a fundamental set of protocol software in the 316 that was already developed. Then in the 316, we were connecting a 360 to it. You had to build some.

Baker: (2-3m/TWK)

Phillips: No, a Honeywell 316.

Baker: Oh, okay.

Phillips: You were connecting an IBM 360 to it. You had to have software in the 360 and some software in the Honeywell 316 that was IBM compatible. That was developed, mostly developed in-house. We did have. We had advice and support from BBN. We had BBN contractors and other contractors on anything that had to do with networking, per se. It was a project that was interesting. I mean, PLATFORM didn't cost a lot of money. We did... They were right to tell us to adopt the ARPANET technology because we didn't have to reinvent a lot of things. Out of the ARPANET technology, there was a protocol called the 1822 protocol. That was the protocol interface between the host and the Honeywell 316. Eventually, the Department of Defense mandated a new set of protocols called TCPIP for Transmission Control Protocol and "IP" was Internet Protocol. They were eventually implemented. They've become almost universal for networking even though there's a set of international standards. They're much more elaborate but those have just not caught on. So that whole set of work really, that ARPA funded was just a tremendous, useful.

Peterson: Well that's the whole idea behind ARPA, isn't it?

Phillips: Yeah. That's right. Exactly. Yeah. There has been talk in the Clinton administration of trying to turn that into sort of a quasi corporate thing that would stimulate non-defense... but I don't whether that's going to happen or not.

Baker: I think what we're looking at is that it's the closest thing that the Defense Department has is pure research and that's something that the American industry almost refuses to fund anymore.

Phillips: Yeah. That's right. At any rate, I guess I served out my time from May of '77 until the end of 1980 as Chief of T-4 and the organization was responsible, the title was Planning and Project management so we had... She had gone toward a Project management approach to things which I don't think was all that successful. We jumped at the idea that, because corporations could use a project management scheme which you, if you were the leader of a project, would go and buy services from somebody and you'd say, "Well I want four programmers and I'll pay you for their time." Those things just don't work all that well in government because

we'll still get the grease. I mean, you couldn't... A Walt Deeley comes along and screams loud enough and all of a sudden those programmers got to be assigned to his project or whatever it is. The program management, which involved enormous documentation and things like charts - Gant charts and... the charts that the Admiral used for developing the submarine...

Peterson: PERT?

Phillips: Pert charts and that kind of thing. All of those things that are supposed to make things work...

Baker: My eyes glazed over in seeing a GS who (fades out).

Phillips: Yeah. I spent a lot of time musing, after I retired, about why things work and why things don't work and it's very hard to figure out but good people, it struck me, are the most things. No form of project management will get you over the hurdle like having good people.

Baker: Quality. The quality of people got to be the major factor.

Johnson: What role did you play in the combining of "C" and "T"?

Phillips: I guess that I was, very early on was a part of the planning and I guess that out of that I maneuvered myself into the T-4 job and when I had been, as C03, I guess,... I was one of the players... Of course it was done under [redacted]

Johnson: What job did he?

Phillips: He had been an Special Assistant in DDO and then when the order to create the new T organization came down, he was assigned as Chief. Then Speierman was made his Deputy Chief.

Johnson: I see.

Phillips: So Speierman had dropped from being Chief of C to being Deputy Chief of the new organization. "T". I think Enst probably did a pretty good job of organizing it but he had upset some of people who did some of the planning.

Johnson: Do you know who the instigator was, primarily, of the idea of combining these two organizations.

Phillips: There had been a lot of talk about this world-wide. A lot of corporations had done it and it had been talked about for two - three years before about the need for doing this. the Department of Defense had some talks about doing this. I don't know if some actual changes had been made in some of the defense organizations or not. I think they had. I think a couple of places, maybe in the military it had already happened. Then there was the Air Force general... ..[stops] Jack... No, no. The guy who heads JPL now.

Johnson: Oh, Lew Allen.

Phillips: Lew Allen. Lew Allen was the one who ordered it and Lew Allen probably

believed that it was the right thing.

Baker: I wasn't sure that you were talking about a Director.

Phillips: Yeah. He may have had some encouragement from the defense staff. Steve Walker, the young man that I had talked about who advocated the use of ARPANET for PLATFORM, left and went down to the DoD Staff to work for [redacted] He was one of the principal planners for computer security as well as networking Though there may have been some agitation down at that level. I think that it has been somewhat disappointing.

Baker: But you had support for the idea all the way up to General Allen, didn't you?

Phillips: Oh yeah. No question about him and probably higher. Probably at the DoD level and there were corporate elements which had done... They had done a combined thing. To me, it was a challenge and its been somewhat disappointing. Some of what I did has come apart in a sense that the communications have been separated from the computers.

Baker: PLATFORM is primarily considered a communications.

Phillips: Yeah, except what you got is, you got the situation where the communicators build the network... I'm sorry... build the connections. They put in the circuits and then PLATFORM is the set of protocols that operates over the top of these. Where I find the discrepancy that I don't like is that, if a circuit fails on PLATFORM, the communicators assume that it's a computer failure , that it isn't a circuit failure. That ought to be so tightly interwoven that the minute there's a failure you ought to know exactly where it is and the people who do the trouble shooting ought to be dual-hatted, if you will. They ought to know whether it's an AT&T circuit that's failed or whether it's one of these interface message processors that's failing. That hasn't happened and last year, when I spent some time talking to the Chief, Chief [redacted] they were called... That was Chief [redacted] guess it's called now.

Baker: Uh huh.

Phillips: They were talking about two totally different centers and two sets of technology to monitor failures and problems. One was going to monitor the circuit problems and the other was going to monitor the problems of the computer driven communications and in the computers themselves. If you're an analyst sitting up in A Group and something fails, you don't care whether it was the circuit. You want it fixed. Right? You're not concerned about whether its the communications failure or a computer failure or a protocol failure or a tape failure or whatever it is. You want to know... You want it fixed. That's the thing that they haven't come that close to. The communicators have a tendency to think that it's O.K. for a circuit to be out for a minute or two or five minutes or something. Well, in data terms, that's not necessarily true.

Baker: That's a lot of data.

Phillips: Yeah. That's a lot of data and it may destroy the whole continuity of the project. If you're project has a gap in it, it may destroy it. You can work around it if you got procedures but you need that. Questions?

Johnson: Yeah. Questions. I had thought of one just a minute ago and it went way out of my head. We were talking about... Well it happened to be very important. In 73 and about '80 or so. About combining the T's...

Phillips: Well we began to get workstations in the sense of we awarded a contract for the Delta Data [computer system]. I don't know whether you were familiar with the Delta Data.

Johnson: Yes. The (Delta Data) 7000's.

Phillips: Yes. The Delta Data 7000s. We awarded a contract about '77. somewhere around there for the first of those and they were a big help. We may have faltered some in developing the software part of them: I'm not sure.

Baker: Were the IBM PCs already in the market then?

Johnson: No.

Phillips: No. The IBM PC came on the market about '82. Right.

Johnson: Yeah, we were still locked in the centralized processing mode. The Delta Data's were the interface with those, as I recall. They were smart terminals.

Phillips: It was a smart terminal with a... with probably an INTELL 8080 processor. It didn't have a... .I don't know,. I suppose it had a rudimentary operator but it really wasn't a user friendly device with the PC or like the Atlas.

Baker: I used two of them. One of them [redacted] and another in P05 working on Product. It was the same hardware but you couldn't tell it by what you had to do to it.

TRNOTE: The speakers become extremely weak from here on to the end of the tape. Readability fluctuates from extremely weak and sporadic recovery to nil.

Johnson: By that time had we lashed a bunch of 370s together and [fades out completely] the CARILLON system.

Baker: We had the CARILLON system, per se, very early on and we had some connection among them under something called TASK operating system on the IBM (2-3M/twk). You could actually queue most of the jobs in one processor and run them on the other processor. So there was some lashing together. It was pretty crude and it was only for batch processing.

Johnson: (XM/twk) was giving the instructions for parallel processing because that was the central processor in (fades].

Phillips: There was and, in a sense it still is. It's the thing that everything comes to rest. There are lots of things. For instance, the KLIEGLIGHTS now get

processed through a (1G/M twk) system. All the KLIEGLIGHTS get dumped into CARILLON when they're through. All of the [redacted] stuff is in CARILLON. The [redacted] is taken out and is taken up stairs to process on separate processors.

Baker: How is that related to the old HARVEST, or STRAWHAT or any of those things.

Phillips: HARVEST had been an Agency attempt to build a great central processor to do everything.

Baker: It ended up being the (1G) project [2M/twk) didn't it?

Phillips: Well, only to that particular problem. You're talking about the [redacted] problem because it would scan, it would scan the [redacted] At that time, [redacted] wouldn't need to do it [fades out]

Baker: So it was never more that [redacted]

Phillips: Well it was originally built to do crypt work too and it had some instructions to do crypt work. It could process the crypt messages. It would process the characters in [redacted] The process could be a... large number of different processes because of the so-called (1G/M/Twk) mode. You could actually be doing a dozen things. You could be running [redacted] if you will. A simulation of [redacted] and [Fades out] So it was quite a fast processor for different types of crypt operations. Had to watch what you were going to (1M/twk) It never had the same facility that the... I think it was (3-4M/twk) in having large numbers of tape drives and disk drives. [2-3M] HARVEST had no disks. Hard to imagine in these days. In fact one of the (4-5M/TWK)

Baker: They had to record them on tape?

Phillips: They bought an IBM 650 at some point. (2-3M/twk) They had enormous problems with it. The (XM) never worked. So they had tapes and I hear them take the (C% CDC) and they couldn't do that. But they still didn't believe in disks. So the disk did not come until much later until the late '60s. In fact they were still doing (4-5M/twk) and it led to a to carry tapes around. I used to challenge people on the elevator from time to time and say, "Why are you carrying all those tapes?" He says, "We're buying disks." "We've got storage in the basement. You don't need to carry those tapes." I think. (XM).

Baker: That's probably where you got the reputation [fades].

Phillips: That's right. But they would salvage those [2-3M fades] I think that they didn't trust me. [XM]

Baker: I need to change this thing. [TRNOTE: Readability is very bad on above segment]

Johnson: [Interview in progress - Readability improves at this point] Again, I'm not smart enough to ask the right questions. You're probably going to be better able to address this part of it than I am.

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Baker: Okay, we're going to pick it again on the 26th of July and we're talking about NSA Machine Systems...

Phillips: I guess that can address your question, Tom, by talking about the way that I see the various processing streams. The way that I see it, HARVEST was never a major part of the processing stream. It was sort of off to the side. It was a thing were you could do special things but it was never part of the daily field processing effort.

Johnson: Okay. Was it mainly a CAF application?

Phillips: It was more a CAF application then it got over to the [redacted] rescan problem. That's the so-called... That's the precursor of STRONGBOX. It never really played an important part in day-to-day processing. The thought was that it would. It was supposed to be a hundred times the power of the 704 and a hundred times the power of the 705.[Note: IBM called it STRETCH] In point of fact, it never got more that about 20 to 1 (20:1) over each of those machines. The IBM 705 line had been the fundamental, day-to-day processing line from something called the 702 which was developed in '53 or '54. I don't know when that was. Then the 705 came out of that. The 705 was a non-scientific processor. A detected processing system. Then all of a sudden you had the IBM 1401s which were similar to the 705 but very small machines. They had a card function as well as a computer function. What began to happen is that you began to get seven 1401s doing, sort of preliminary processing with tapes being fed into the 705 which could do more significant processing. So the 705 was carrying the bulk of the processing up until the time when the 7010 came into the NSA inventory. The 7010 was, in fact, a combination of the 1401 and the 705. It was still a text processing system. NSA had three of those. Those occupied most of the processing when the 705 died so that would be somewhere in the very early 60's.

Johnson: When you say "text processing systems" are we talking about crunching [redacted]?

Phillips: We're talking about TECSUMS and [redacted] comms and things of that sort. Anything that's opposed to crypt or scientific language.

Johnson: Okay. A processor of raw intercept.

Phillips: Right.

Johnson: As it pertains to a CA a special C/A process.

Phillips: Yeah.

Johnson: And that started in the late 50's.

Phillips: Well no. That had begun sometime in the mid-50's. We had begun to process TECSUMS off-line. We'd take the paper tape from a TECSUM that had come in and read it into the machine. The SOAPFLAKES which was the first of the [redacted] scanning programs was developed for the 704. Even though it was a scientific processor, it was developed as a word

processing system, if you will. That would have been in the late 50's. Probably '58 or '59.

Johnson: So when an analyst came in to work in the morning, he would just... The traffic would already normally have been processed downstairs.

Phillips: That was quite a while till that happened. The analyst, for the longest time, still had torn TECSUMS off the PDP copy and, in fact, that was mostly the case up until '66 or '67, I would guess.

Johnson: So you would do the manual processing of TECSUMS and MATSUMS (sic) and things like that.

Phillips: He did manual scanning. Some of it began to be captured from the signal, incoming signal, through the MESHER and processed in the '61, '62 time frame. The [redacted] was one of the first. Some of the [redacted] was coming in from, I guess, from the overseas collection sites. This would have been the HF [redacted] It was coming in and was being captured on MESHER and then was being taken, by tape, to the 704 where it could be scanned by SNOWFLAKES. That was beginning to happen about '60 or '61. Somewhere along in there. There were probably one or two TECSUMS that somebody was trying to process but not overnight for the analyst consumption the next morning.

Johnson: Okay.

Phillips: That really didn't get started until we moved everything back here from Zweibruecken. When we moved the stuff back here from Zweibruecken, I think I said this earlier, that what happened was that, a year or so after we started processing... I came back from ICAF in August of '65 and they were already processing. Then I took over computer applications in October of '65 and then a couple of months later we formed, in the operations group, something called the Field Processing Unit under an Army Captain [redacted] It was an 24-hour day, a seven-day a week operation. Almost, in a sense, a carbon copy of what they were doing at Zweibruecken. It probably had a slightly wider charter than that because I think, maybe, it was getting a few things from JSPC and some other parts of the world.

Baker: When you're talking about moving back from Zweibruecken, you're really talking about function rather than the (2-3G).

Phillips: The function - yeah. The function that we moved back. Zweibruecken had had a central processing unit for European [redacted] problems and that was just picked up, lock, stock and barrel, and moved back here.

Johnson: That begins the era of when the traffic was delivered from the basement to the analyst every morning in traffic carts and he didn't do all the traffic any more?

Phillips: Right. We began with the field processing effort. We had been doing this a few months before the field processing was formally set up and it wasn't working very well. I mentioned that was one of the things that Levenson

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gave me to do when I came back from ICAF to figure out what was going wrong. Every night, something went wrong.

Johnson: Yeah.

Phillips: But the field processing unit had intended to correct all those things and we began to set a cutoff. I believe the cutoff was originally one A.M. In other words, if it arrived here by one A.M., we'd have it on the analysts desk by something like seven. If it hadn't arrived... so it was all a question of arrival. Not the radio day but a question of when it arrived in the basement. That grew and that grew into a... It started out with a pair of 350s and a 7010. Got rid of the 7010 and it moved, later, to a larger 360. Then that, in some sense, is much the precursor of CARILLON as anything. That doesn't really touch on the fact that CARILLON also does all the things... It inherited all the things that HARVEST was doing but HARVEST was never terribly successful in a way. I mean, it had a lot of gee-whiz things about it at its best. But, in point of fact, in terms of being able to integrate it with the rest of the process, it was terrible. That was traditional and is to this day traditional for the R&D effort. They were great at building machines that would do gee-whiz but sometimes you had to feed them with punched paper tape or take the results out. The only way you could get the results out was to go and look at the screen. There was no printer. They didn't understand the need to output in magnetic tape. It's gotten better but there are still dysfunctions there where people put it out in the wrong format, for instance.

Johnson: What was the interaction between the Agency and IBM - being upgraded to the 360? Was there any interactive mode or were we taking whatever they happened to be producing at the time?

Phillips: I think that you would have to say that the Agency [redacted] had had the HARVEST project which I believe was originally called PLANTATION. I think Sam Snyder's notes would cover this far better than I could. He was in charge of it. The Agency was tightly [redacted] was the, sort of, the principal leader of the HARVEST [redacted] believe he was the developer of the 360. Not the technical developer but the management developer of the 360.

Baker: His name's cropped up before when we talked with the R&D people.

Phillips: Yeah. He was very close to NSA.

Baker: Of course, it's a very common name. Might be more than one [redacted]

Phillips: No. No. He was very close to Tordella. There was a very close feeling of bondage there with Tordella.

Johnson: Did he have any cryptologic background?

Phillips: [redacted] didn't but he had some people on his staff who had worked with the Navy and I can't remember their names. There was one guy on the Staff of the HARVEST project who had been at Princeton and worked with [redacted]

[redacted] on the first machine that [redacted] worked out on. There were some very bright people. I don't remember. I'd have a hard time reconstructing their names but I could probably get them for you.

Johnson: [redacted] would be a very good person to interview if he were still alive. Somebody like that.

Phillips: I think that there's a fair chance that he is. I could call. There's a guy in here who used to be our principal IBM rep named [redacted] who is alive and in the area. [redacted] had and almost like a person line to [redacted] This is the thing that may it so good. If anything was going wrong, [redacted] could pick up the phone and cal [redacted] who was the Vice-President and [redacted] would put a couple of guys on a plane to come fix it or something.

Johnson: It would be nice to get both those people in the same room to talk.

Baker: It would be nice to get that kind of service out of those computer companies.

Phillips: Yeah. Well, I'll call [redacted] and talk to him and see what he knows about [redacted] There was a project... When I came back from ICAF there was a project to build a multi-processing, multi-programming system called (B% FIESTA). They had approached something like five of six companies and asked them to propose a design and a cost and a schedule and all those sort of things for a system with two very large processors linked together and with multiprocessing and multiprogramming to keep just feeding the stuff in. [redacted]

What happened was that the 360s continued to operate independently until sometime in the 70's when somebody developed some software that allowed you to use one machine as a master and the other as a slave.

Johnson: Uh huh. At that point we have five of them hooked together as I recall.

Phillips: Eventually, we got to five, I think, and, of course, the lines in the 360's, the lines between the scientific and the non-scientific tended to disappear. We had the 704 which was the precursor of the 7094 and the 7094 was the fastest scientific machine up until about '70. That was the one on

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which we ran SOAPFLAKES. All the [redacted] scanning was run on the 7094s during my time. Eventually that all moved to a set of 360's. Anything that resembled a scientific processor, you either moved over to the CRAY and CDC world because it was crypt or it was done on a 360 because you could certainly do quite a bit of scientific work on the 360.

Johnson: I assume now that the 360 was capable of accepting multiple software languages and things like that?

Phillips: Oh, yeah. It had PL-1 which was the IBM thrust to create its own language to replace FORTRAN and ALGOL and all the others and there was a burst of PL-1 programming here which worked pretty well. The Agency has had a model career on languages. At one point they jumped on ALGOL. They were going to standardize ALGOL for all machines and they paid a lot of money to people to develop ALGOL. They tried to develop an internal language called POGAL which was the Procedure Oriented General Operating Language.

Peterson: It was actually taught in a computer course for a while.

Phillips: Yeah, it was. They finally gave up at some point in the 70's but it's still a problem in a sense that when you hire bright, young computer scientists and bring them in, they all want to invent their own operating systems or develop a new language. They look at a crypt problem and say, "Gee, we could write a new functional language that would do that a lot better than anything else." In fact, they developed one for HARVEST, called BETA which was pretty good. But the problem of supporting it and maintaining it just made it unworkable, really.

Johnson: Other than POGAL and BETA, can you think of some of the other internal developments?

Phillips: There was a thing for the 1401 called PAL which was something like Procedure Analytic Language or something of that sort. It was a set of generalized processes. They had one which... There were people here that believed was really remarkable, that they developed for the 705 called Transembler. Now Transembler had a set of functions that were similar to the functions that you could do with cards except you could link them together and run them consecutively. It was pretty good as a matter of fact but it may have missed the mark in the sense that it didn't transition into a modern language. Maybe people kept thinking you could still do everything that way. That was a very early development and there are people around who know far more about that than I do. That was the principal way you did things on the 705 as of 1959 when I headed this little Joint Mechanization Group. We had some people trying to do 31-day T/A matrices. Callsigns and dates and so forth and that was being done with Transembler and some PL-1.

Johnson: On the creation of the massive SIGINT database. Was A Group the first of the analytical groups to go in for a massive database with some centralized computer? Could you credit that more to the [redacted]

or...?

Phillips: I think that you have to credit that to A Group and it's true that the [redacted] problem was being accumulated on tape and there was a collection of [redacted] if you will. In other words, everyday stuff was put aside and so forth. It was not a database in any more an elaborate sense. It was just a collection of all the [redacted] messages and you could rescan them on HARVEST at a pretty fast clip. We were running monthly, during the late 60's, we were running the rescan once a week. If you had a rescan you wanted to do on [redacted] if you got your terms down, by Friday noon or something, it was run over the weekend and by Monday morning, you'd have the results. But A Group decided, and I think it was almost certainly under [redacted] stimulus, to build the A database although they, I can't remember... I think the guy's name was (B% [redacted] who actually did most of it. One of the people who worked for [redacted] He began to draw up the formats for the A database and we began the conversion of TECSUM formats into A database in '69, I'm pretty sure. I don't know exactly when it really reached "critical mass", so to speak because it was a slow process. It turned out that the conversion of a given TECSUM, even though it was already formatted, into machine format into the A database was non-trivial. I keep pointing this out to people to this day. What happens is that analysts make adaptations to formats. You give them a format and you say, "Put the callsign here and the date here and the time here." and so forth. Along comes an unusual problem and they immediately adapt. If the callsign is too long, they move it over to the Comments field. [laughs] They put an asterisk in the Callsign field and that...

Peterson: Oh, nefarious analyst...

Phillips: Yeah, and that never gets documented. There are a handful of people who know exactly what it is and...

Baker: By the time that's crunched into 1's and zero's...

Phillips: It's a match, though...

Johnson: Meanwhile, out in the field... I can remember going through this because I was out in the field at the time going through the very messy and difficult process of converting over. Everything had to be critically formatted. Everything you sent in to NSA, you used... It was no longer free format. Everything was put into fields and you had that...

Baker: Yeah. When do you date that?

Johnson: Well, I went to the field in '64 and we were already sending back huge numbers of TECSUMS and as time went on, they were more and more tightly formatted. There was less and less tolerance.

Phillips: That was almost certainly a function of the field processing element which meant that we can now capture it on-line without having to capture it on paper tape and you had this field processing effort which ran 7 days a

week, 24 hours a day. It also had a group of people who did error corrections and I was instrumental in changing that. The attitude had always been, in C (Group), that they wanted to control the people who did the error corrections. I said, "Nonsense. Let's let the analysts do that because we don't know how to make the corrections and they do." So we turned the function over to A Group and I was glad. Part of it was just pure selfishness. When we were trying to do it ourselves, it would turn out that three people would turn up AWOL and two others would be on sick leave. Anyhow, there would be a scramble. "Who's gonna make the corrections tonight?" I said, "Let somebody else worry about that."

Johnson: I can remember when these functions were being done at Zweibruecken. Just continual conflict between the field site and Zweibruecken about data formatting corrections. Everyday we'd get a long list of all the errors, broken out by the intercept organization so that everybody would know who had the most and who had the least errors.

Phillips: Some of those efforts, by the way, that the Air Force did, like that, were quite good. They may have been overdone. They were doing that on AG-22 later on. They were feeding back to the stations, how many errors there were in their AG-22. But to not do it, which is the state we are in now, is terrible. They don't do anything. They make almost no effort to check anything coming in.

Johnson: By the late 1970's, I know they had given up trying to maintain the integrity of the A database.

Phillips: That's terrible. It really is. They're going to destroy it.

Baker: Can we stop here for a second. Let me double check this thing..

Johnson: How about the creation of GAPS and DAYSEND as processes? Can you tell us anything about that.

Phillips: Yeah. I can tell you my perspective. There are some of us who would change this. The whole project for the AG-22 had been based on paper tape. TCOM came up with circuits. Its name eludes me at the moment... STRAWHAT circuits that were point-to-point circuits from a station into the basement. The material was to be fed into MUSSER and collected there. I may have mentioned in an earlier thing that [redacted] and I were the ones who bastardized the coding because it was a 78-bit coding and the MUSSER would really take only 6-bits so we would have had to use the double frame to handle the 7-bits but there were less than 64 individual characters so we just modified some of them to get them into the 6-bit thing. There wasn't any other practical solution but if it doesn't, you end up with a bastardized ASCII code, if you will. The work was going along and a few people were using the STRAWHAT circuit. There was some attempt to use it with respect with Vietnam but that hadn't worked very well I don't think. The first thing that I know, about some time in '69, I heard that what we then called K Group, which was the collection management element, was proposing to build a concentrator in the field. A small

computer, a concentrator, in the field which would concentrate all of the stuff on magnetic tape and allow you to forward it back. I don't know whose idea that was. I first hear about it from [redacted] who was the budget guy. He was the guy who was pursuing it at the DoD level to get the money for these Honeywell 316s. What they wanted... I provided him with some information and people like [redacted] did and others. We provided him with information. He put together the argument and went to the Pentagon and got the money to do this. All of a sudden we now had approval to put what would have been 25 of 30 316s in the field. From our point of view... My deputy was a fellow named [redacted] and he said to me, "I think I know how we should do this. We should put [redacted] in charge of a special group. I think that I can borrow some people from C9," which was our counterpart software organization, "and a couple of other places and if we can get this [redacted] who was still being paid for... by that time he was bing paid for by us but he'd come originally out of the Zweibruecken transfer, "and we'll put those four or five people together and they can do it." I said, "Fine. Go to it. Do whatever you can." He did. He organized the group and put it together and [redacted] took charge of laying out the plans, describing the functions that were to go into the 316. I don't know who actually programmed the 316. The group that I'm talking about were, fundamentally [redacted] laid out all of the specifications for what the 316 was to do and they developed that mostly [redacted] of 70 and so most of that was developed, probably, in the next year. It was put together at very, very low cost and worked pretty damn well when you think about it that the 316 had 16,000 words of 16-bit words of memory. No disk drives. Four tape drives, I guess. If you wanted to overlay any of it, you had to write it off to save it and read it back in. It began to be deployed in about a year probably. I think it was a great success because my own biased view is that, for STATUETTE they spent a lot of money and they achieved very little more that they'd done with IATS.

Johnson: So the 316 allowed them to concentrate data in the field and send it back on a high-speed circuit and when it got back here, at that point, what happened to it?

Phillips: At that point it was being transferred... By that time we had built a system called HOLDER which was a UNIVAC 494 which would allow you to interface the comms circuits directly. So we had gotten rid of the MUSSER in the direct flow, although we used the MUSSER as backup, so the stream, the signal, was coming in was going into HOLDER and a duplicate copy was being fed into MUSSER so everything was being recorded on tape. HOLDER built batch files and then transferred the batch files across to the 360s through a shared disk arrangement. IBM equipment at that time, and maybe still to this date, is notorious for being difficult to interface. Somebody came up with this business of a shared disk drive so the UNIVAC 494 wrote the files to the shared disk and then

the 360s could access them. The processing was done that way and what the UNIVCAC was able to do was to service 25 or 30 or, maybe 35, 316s in the field and it could ACK and NACK and handle all the interfaces to those and build the files and then transfer them across the 360s. Now the [redacted] group had recruited, as it got along... As he got the framework, he recruited, from A, B and G (Groups), programmers who were to write their own application specific things. What he did was to write the framework and I can't remember the name of the program but I guess, (B% CONNOR and CAVETOWN) were the two programs that he and his group prepared and then there was something called the "A Data Executive" and so forth.

Johnson: Was that a technological achievement? To take data that was being produced on a 316, a Honeywell 316, receive it in a 494 - a UNIVAC systems and then, finally process it on IBM equipment. I mean, you've got three different companies involved here.

Phillips: The biggest problem was the passing from the UNIVAC to the IBM. The UNIVAC and the Honeywell 316 - no problem because they were built for communications and had communications features. Interfacing the IBM has always been a problem and the IBM software was not transactional. It's batch oriented so we kind of just... Had to do everything by batch. I campaigned for a long time for... For five years before I left, to turn that all in to a pure transactional system. Especially under STATUETTE so that the minute the operator closed the file, that file would be transmitted and you would do a prescan on it and a predetermination as to whether it had a message in it that you could break or whether it had a KLIEGLIGHT in it or something and if it didn't you could push it aside to the overnight processing. If it did - you fed it straight... You'd feed it straight for processing. That hasn't been done to this day. Part of the problem was that... the problem that I ran into in the late 70's was that A Group was pretty strongly opposed to this because they were putting all of their eggs on the [redacted] away or would in any way interfere... They were using the IATS. The neat thing about the IATS was that they built these transmission functions into it that were also independent of AG-22. You could take a [redacted] on it, carry it over to the Honeywell and mount it and give it the right instructions and it would transmit it.

Peterson: [redacted] you're not talking about voice necessarily?

Phillips: No, I'm talking about bauded signals. Yeah. What was happening, was [redacted] They wouldn't talk... They wouldn't even talk to me about making changes in the processing of the Morse system and I kept saying, "I'm not going to take any resources. I don't want to steal anything. It's not going to cost anything." They just didn't believe me.

Johnson: You talked about the use of the formatted form for HOLDER systems. I

have some questions about the UNIVAC comms handler type like the 490 and the 494. I had believed, I guess, that the first time that we had used the 490s to do comms, rapid comms processing might have been in CSOC but I saw, in files, the other day that, apparently DEFSMAC may have been the first organization in NSA to try to collect signals over communications lines and receive them in a computer.

Phillips: I'm almost certain that it was DEFSMAC. They had the circuits installed and they had, at one point. when I was in C5 - that was between '65 and '69. That was before CSOC really had gotten going. They were... Upon a missile firing, they would collect parametric information from the field sites on the 494 and carry the tape over to the 7094 for scientific processing and computing the parameters. I believe that all these preceded the CSOC operation but I'm not sure. I don't know. What date would you give to the start of CSOC?

Johnson: We still don't know. We're thinking '66. The same year that we started [redacted] I 'd have to go back to John Eastman's tape because he was involved in the creation of CSOC and I can't remember what year he said but it was right around that time that they started some (B% follow-up) effort.

Phillips: Well, as I mentioned to you in the hall, the one person that we should contact at some point is a fellow named Saul Levine who worked in C and I consider him the father of HOLDER. Holder was his concept and he went on to work with HOLDER as it was developed and he had worked with the MUSSERS and the MESHERS and so forth. He was, very early on, involved in some of the handling and, in fact, the handling of the [redacted] So he would, perhaps... My guess would be that the CSOC had been started in '66 didn't have any processing to speak of. They were tearing TECSUMS off of a whole bunch of printers that they probably had... For year they had a hundred or so printers. Remember the NSOC had printers galore and they were tearing paper. I don't believe they had any on-line processing until [redacted] came along with the AUTOLINE concept.

Johnson: [redacted] still around?

Phillips: [redacted] still around. He works for Hewlett-Packard now. He worked on the Apollo.

Johnson: Is he still in the area?

Phillips: Yeah.

Johnson: I suppose if the Phoenix can't give me that, I can call HP.

Phillips: Yeah. I think that I could probably dig up a number if you can't.

Johnson: Yeah, I'd like very much to interview [redacted] At some point they started trying to work with the BULLMOOSE things. We named them KLIEGLIGHTs and I believe that they're first. Yeah they were all coming in on those MOD-28s and, eventually, they got them to interface into a

494.

Phillips: Yeah, they did and [redacted] was up to here in that and... .

Baker: That would indicated that he was drowning, huh?

Phillips: Yeah, right. [laughs] I think he did some brilliant work. I think he's very difficult to work with because if you weren't working on what you were working on, you're wasting your time and you're evil, in fact. He did a certain amount of character assassinations on people who got in his way. He wanted... But he did some brilliant work. I know that the thing he did was, he was working with a lady named Carolyn Palmer who was an expert 494 programmer and former cryppie so she had an enormous amount of what I call a good solid technical background as he did as well. [redacted] was a Russian linguist. He'd been to Oberammergau for the course and had done some marvelous work. He had built a group which was known as the AUTOLINE Group of young people who were just incredibly dedicated and loyal and they just had a fiery approach to everything. They would go off and do a process. I mean, if you'd call them in and talk to them about processing some set of material like a set of KLIEGLIGHTs and tomorrow morning they would have the first cut which would be pretty crude but by the next day it would be polished a little more and in a week you'd have a pretty good product.

Baker: Was there an association between AUTOLINE and HOLDER?

Phillips: No. There isn't. HOLDER was a separate 494 and separate software and was looked down on by the AUTOLINE people because it was, fundamentally a batch process.

Johnson: I know. I worked in A8 at the time that all these things were going on. Deeley tried to get me to go over to work with AUTOLINE. Yeah. They were being pushed by Deeley and Lord and they pushed them hard. They wanted everything to happen now.

Phillips: Yeah. Well, there are several people around who worked with the AUTOLINE project. If you talk to [redacted] you ought to try and start off the talking with some of them. I think there is a girl named [redacted] and there's a fellow named [redacted] who worked with them. [redacted] is in C and... .

Baker: We've had... .I have some... [redacted] on tape about... computer security was his topic.

Phillips: Yeah. He got into that about five or ten years ago. Waste of a good man, I think. I chaired the subcommittee on Computer Security for the DCI for two years. I got stuck in that job.

Baker: I'm afraid that COMPUSEC is a two-stage situation. You either believe it or you don't.

Phillips: I think that its worth it. Everybody will talk about it but, when it comes right down to it, nobody wants to do anything about it.

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Baker: its more like the weather then?

Phillips: It's more like the weather. yeah. If you came up with a solution tomorrow that said, "It's going cost everybody one percent of their time and effort and money and everything else but we're going to have perfect computer security," you couldn't sell it. Nobody wants it to interfere with what they're doing. In fact, that's part of why NSA's COMSEC effort has been so disliked by the Services. It always imposes a burden on operations.

Johnson: It's sort of like TEMPEST.

Phillips: That's the Exact message.

Johnson: Something that nobody has money in their budget to do and it always comes up and bites you.

Phillips: Right.

Johnson: Okay. Where do you want to go from here? Those are the things that I want to get into today.

Phillips: Well, is there any more that you want to know about that, that you think I can... ..?

Johnson: I think that you'd have to guide me in this because I don't know what else.

Phillips: Certainly [redacted] and the AUTOLINE group are what made the time sensitive processing system work. They did all of it and they did it on their own to a great extent. They created a a lot of ill will with the people who were involved in batch processes. It is my belief that if we could have had some collaboration between those two kinds of things, we would have been far better off. The attitude of people like Deeley didn't foster that. He was going around saying things that people who were working on in-depth studies were wasting their time and things of that sort.

Johnson: Its probably endemic to the A7, A8 support.

Phillips: It was. It was.

Johnson: There were two empires and they were working on different concepts of processing and reporting.

Phillips: They finally made some concessions in that the tracking data that came in with the KLIEGLIGHT then wasn't sent in separately again. It was actually forwarded from the 494 AUTOLINE processor over to the process on the CARILLON and some other concessions were made. If it had been done in a spirit of cooperation, it could have been a lot better. A lot of effort could have been saved in that.

Peterson: I need to change the tape.

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Phillips: Is it on now?

Peterson: Uh huh.

Phillips: Okay. I guess I'll pick up at that place and perhaps repeat some of the material I said before. I came back [redacted] in the middle of '73 and

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became Chief of C03 which was the computer planning staff. At almost the same time, about a year later we had... No. In fact it was only six months later we had some meetings about PLATFORM and decided on the technology which was to base it on the ARPANET. I spent a lot of my time thinking about that over the next seven years. The main contribution I made was to fight off the efforts of people who wanted to do something different. That was the thing that I worked at a lot of my career was trying to achieve a practical set of standards as opposed to what happened with [redacted] when he took over my job in T4. He wanted to force standards on people. I always thought there was some practical level that you could do this. People... Standards ought to be something that people want to do because they're helpful to them. If you're just forcing them down their throat, they're not much good. Platform was an effort, in part, to promote those standards and it went along pretty well and became operational in 1977, September '77. One of the things, going back to something I said on the tape just a few minutes ago was that the most massive connection problem we had, in terms of volume, was from HOLDER to the IBM complex. That's the one that I forced onto PLATFORM simply to make PLATFORM operational because you had the situation that, with PLATFORM you had all these programmers doing funky and interesting things but none of them were really operational. People were talking to people in Harrogate and they were sending little files and swapping notes and doing mail and things of that sort. That didn't amount to anything in an operational sense. Nobody cared whether they went on at night or not. By forcing the HOLDER to an IBM connection which was probably 20 million characters or more to go operational, in a sense I was forcing the whole network to go operational and it did. C7, the Operations Group, put a small set of people together to operate 24 hours a day, seven days a week. PLATFORM has made an enormous difference but its been difficult because the interfaces have never been easy. They have not... Under PLATFORM II (two) they have converted more to standard protocols but it turns out that protocols deal at lower levels. The applications and protocols were where the difficulty is. They still are not very well treated. In other words... At an even higher level, I contrast the problem which [redacted] of (C% Quanspan). do either of you know [redacted] pointed out that you [redacted] would be different. The thing is a semantic problem. Even if you solved some aspects of the formatting of the communications problems and we're still very poor at that in the Agency... We had a standards element in the Agency which was supposed to deal with that. It turns out, for the most part, that they were able to standardize the things that nobody cares about. If you find an obscure data element like something that almost nobody uses, there's no problem to standardize it. It you state that you're going to standardize frequency, all hell breaks loose. Some people want it

in Megahertz, some want it in Kilohertz, somebody wants it another way and then they want to have an amplifier on it showing whether it was estimated, measured or absolute or... PLATFORM has encouraged a lot of those things. It has encouraged standardization. I think that almost anybody now... Any system that's collecting data can, with some effort, forward it directly into a process. As a matter of fact I wrote a paper before I left on that. My view is that everything should be process-to-process communications. That it should be transactionally related so you shouldn't have to stop and wait for things to happen. You should decide when you finish copying or making a cut whether you want it processed immediately or not... You do that on the basis of both human and machine interaction. We've only gotten part of the way there on that. There's still a lot of forces in there. I'd say that... It shows my bias that most of the NSA managers are not very interested in improving processes and reducing effort. They look upon the size of the Staff as more important than anything else. Manpower. That was the kind of thing that I did in C03 and also in T4 in '77, in May of '77 and I stayed there until the end of 1980. In the merger of C and T, we made some headway at merging the technology and the techniques but we still left a lot of gaps. There's still a lot of gaps. The communicators still think in terms of circuits that are different, conceptually different from the kind of connections you want from machines. In the old T7 which is now Q something or other, there are two elements talking about managing networks. One was talking about managing computer networks and the other was talking about managing the underlying communications networks. They really ought to be interlaced.

Baker: Are you sure that dichotomy still exists?

Phillips: Yeah. They're in the same organization...

Baker: Then they would be trying to sell something different.

Phillips: There's some rational to separation. You go to AT&T to get a circuit or you go to somebody else to get a circuit to make the computer connection. You probably... You now are in the software game and the question of whether...

Baker: Yeah, what I'm getting at is now all the talk is of local networks.

Phillips: Well it is.

Baker: They do everything. The computers are the controllers and all that sort of thing.

Phillips: Yeah. Yeah. That should happen.

Baker: The impression is that it's happening before our eyes. It's just not quite there, huh?

Phillips: No, it's not there. AT&T, for instance, controls its networks with a computer. [redacted] I'm sure that they just dial up something in a computer and it assigns the circuits

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available but the interaction between that and the real computer networks... A kind of example is a question of what happens when the link between the 370, or whatever it is [redacted] and a 370 in the basement seems to be faltering and the whole question of deciding whether, "Is it a software problem? Is it a hardware problem on each of the two main computers? Is it a communications problem?" Right now those are still kind of separate. No finger pointing on the wall, you know. "It's not my machine. My machine is still running, you know." In fact, your machine can be running but you're machine is running a whole bunch of processes. One of them can be failures. This happened over and over again with things like the Model 204 which was a database that A Group used for an awful lot of the stuff that they did, was that CARILLON would be running fine but the people who worked the 204 would have brought up a new version overnight. Not told anybody. The analyst goes to do something and it won't work. He calls CARILLON and they say, "Can't be anything wrong. CARILLON is running fine." It's an enormously complex thing and they found some effort, found some effort to build Watch Centers to help some of this. Reliability of hardware makes an enormous difference. If hardware were less reliable than it is, we'd really be in a difficult way. I don't know that there is anything more that I can say about that kind of thing. Later on can talk about more, I guess. Can you think of any other questions that relate to...

Johnson: No.

Baker: You were running T4 when you retired.

Phillips: Right. I retired as Chief, T4 on the 30th of December 1980.

Baker: My first contact with it was almost exactly a year later... .[fades] This was about eight years later. Things must have changed quite a bit.

Johnson: We were... I know when I was doing one of my frequent tours at the Agency at the time with the Air Force. It was becoming apparent that the, at the time the 370s, the CARILLON complex was trying to handle too much. You got in at 8 o'clock sometimes and you had a Delta Data 7000 on your desk and you tried to run some processes on CARILLON. Get some information through that Delta Data. Sometime it would take over an hour to make your connection and get you data over the circuit., I felt that was... It was at that point that people started thinking about pulling things off CARILLON. At that point they had small computers that could go in the work space and they could do things on a decentralized basis.

Phillips: I'm sure that's true. The kind of thing that frustrated me a lot was that the Operations people, and I'm sure that they had their own reasons for doing things, were not really very good at load-leveling of processes. For instance, they would allow people to run large batch processes. Larger than that priority system. The priority system would say, if you had 10,000 lines or something, you could run it in one minute, but if you had more than 10,000 lines, it was a 20 minute turn around. That's all expressed in

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the priority system. The operating system allows you to abort a job. I'd say to them, "Why don't you abort the jobs when people put in a massive job with a high priority that was illegal." "Well, we don't want to upset the people," and one thing or another. They went on processing tapes far longer than they should have, I think. because tape handling produces a lot of errors and it's also manpower intensive. They have gotten away from a lot of that now. I go down to see the control room. They have everything up in the Central Control Room. I can't tell how well it's working but the answer to your thing was to find out what was happening. I drew the analogy which was highly critical but was it... they didn't know any better in CARILLON operations whether you were running bowling scores or a [redacted] As far as they were concerned, it was just one more job. We did try to instill some idea of priority and so forth but it was too large. What one needed to do is what they've done to some extent but they're now recombining, was to separate out processors. To say, "Okay, if we're going to be breaking out speech that concerns [redacted] that's going to run. It's going to run when nothing else runs. " That never really quite happened. It got better at it but... ..They slowly responded to that sort of thing. Some of it is criticism of the analysts themselves who don't demand things and, sometimes, there are analysts who demand too much and alienate the system by... Sometimes analysts, Deeley type analysts, become so insistent and will crucify you if you aren't doing it his way and that doesn't help. You need to cooperate. I don't know exactly how well it runs now. It runs a lot better it seems because hardware and software have those failures but they still have a lot of problems. There's still a terrible lack of training for the analysts and too much variety. I just spent time talking to a whole bunch of analysts in A Group and B Group and, almost to a person, they say they get a, maybe a PC-like machine and they begin to learn to use it and, Bingo, somebody comes along and says, "You got a SUN. We're going to take that away." They're unhappy because a lot of them have a PC at home and they have software at home and they could learn to use DBASE III and they could learn to use WORDPERFECT and so forth and they don't have SUNS. I'm, certainly, exactly in that category. I have learned to use the SUN because I don't feel that... Mostly when I was a contractor, I didn't feel like learning it on the government's time. I didn't have one at home but I could learn the PC at home, if I had one.

Baker: Do you think the average analyst could tell you how to correct these things?

Phillips: No, as a matter of fact, that's an area which, apparently, has... .

Peterson: That's declined, I think. Over the last couple of years.

Phillips: That's declined very sharply. Even as early as 1960, when [redacted] and I first started working on the AG-22 problem or the AFSAV D311 problem. There were analysts [redacted] because we'd go back to them and ask them, "What does this mean?" We had the

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raw traffic in front of us. We'd go back to ask them. "Well, I don't know. I just work from the machine listing." We were looking at Q signals and chatter and things like that. Your only hope was to find the guy who was an ex-operator who would know.

Peterson: He might be an Air Force heroes. [Laughs]

Phillips: Maybe an airplane guard... ..Well, I can't think of anything more at the moment.

Johnson: Well we keep these tapes warm and come back when we have more questions and we'll inevitably will.

Baker: I don't think we got above Cat III today. Does anybody think we did ever?

Phillips: I don't know what the treatment of the [redacted] is. We didn't talk about any specific treatment.

Johnson: No, no details.

Baker: Okay, we're done.

[End of Interview OH-1993-23-PHILLIPS]